Learning From Home Offline Booklet

Term 3 Week 8

Stage 3

Offline Term 3 - Week 8 - Stage 3

	Monday	Tuesday	Wednesday	Thursday	Friday
Morning Session 1	**Daily Gratitude** Go to your Daily Gratitude document and fill it in to start your day!	**Daily Gratitude** Go to your Daily Gratitude document and fill it in to start your day!	**Daily Gratitude** Go to your Daily Gratitude document and fill it in to start your day!	**Daily Gratitude** Go to your Daily Gratitude document and fill it in to start your day!	**MINI PROJECT DAY** **"Space Vacation" Project** **Mission 1:** **Space: The future destination of holidays!** **The Space Vacation project will be completed over 3 missions (3 weeks).** Over the project, you will learn about the planets in our solar system, choose one and then make your planet the next best holiday destination. Over the three missions, you will need to build on your planet, create a holiday town with the needed buildings and amenities. You will also , advertise the planet and its attractions to the Earthlings and design and make a vehicle for use on the planet.
Morning Session 2	**Spelling** Correct the Spelling Mistakes	**Reading** Today choose a book from your own collection at home, the newspaper or a magazine that you have. Find a nice, warm spot in the sunshine if the weather is nice or under a blanket if it's not and enjoy a session of reading.You may choose to read silent or practice your fluency by reading out loud. This should last for about half an hour.	**Reading** Today choose a book from your own collection at home, the newspaper or a magazine that you have. Find a nice, warm spot in the sunshine if the weather is nice or under a blanket if it's not and enjoy a session of reading.You may choose to read silent or practice your fluency by reading out loud. This should last for about half an hour.	**Reading** Today choose a book from your own collection at home, the newspaper or a magazine that you have. Find a nice, warm spot in the sunshine if the weather is nice or under a blanket if it's not and enjoy a session of reading.You may choose to read silent or practice your fluency by reading out loud. This should last for about half an hour.	
Fruit Break					

Morning Session 3	**Writing** **Jurassic Age** Complete the 'MONDAY Pobble Jurassic Age Questions'	**Writing** **Jurassic Age** Complete the 'TUESDAY Pobble Jurassic Age Writing'	**Writing - persuasive writing** Open the 'why books are better than movies' page. Write a persuasive text on why books are better than movies. Don't forget to include an introduction, 3 argument paragraphs and a conclusion.	**History** **A Settler's Life** Read through the passage 'A Settler's Life' and complete the attached questions.	**MISSION 1: SPACE the future destination of holidays** Today's mission **is the most important** and begins with you researching the planets of the solar system through a series of activities. Only once you know alot about the planets can you then decide which planet you want to turn into the next number 1 holiday destination. .
Lunch					
Middle Session	**Maths** **Problem solving** Complete the **MATHAROO** problem solving worksheet. Answers have been removed and will be posted up by your teacher later in the week.	**Maths** **3D objects and nets** Complete the following worksheets: **Tuesday 3D objects and Tuesday nets of 3D objects.**	**Maths** **Investigation part 1** **Design task: Make a 3D robot.** Open the document titled **"Wednesday Maths Investigation".** Read through the instructions on the first page and complete the plan. Use the 3D nets provided **(Wednesday nets for robot)** to build your very own 3D robot.	**Maths** **TASK 1:** **Investigation part 2** Keep working on your robot if you have not finished it. Open the document titled **"Thursday Maths investigation reflection"** and complete your reflection about your robot design task. **TASK 2:** Open the document titled **"Thursday maths"** and complete the worksheets.	**ZOOM SESSION 12:30pm** **Class ZOOM session Log into your google classroom to get the link to join your class on a zoom call.**

Recess					
Afternoon Session	**Science** **<u>Emu in The Sky</u>** Task 1: Read the text ***'Emu In The Sky'*** and complete the corresponding comprehension questions. Task 2: Read the ***'Emu in the Sky Cloze Passage'*** and fill in the blanks.	**PDHPE** **Indoor Obstacle Course** Create an obstacle course inside your house. You can use furniture, supplies or anything that you can complete physical activities with. Make sure you get your family to have a go. Time each person and decide who was the fastest and who had the most skills. Always remember to be safe!	**<u>SPACE Art</u>** This week you will use the reference pictures of planets to create your own space themed artwork. You can use paint, crayon, pastels, coloured pencils or whatever art materials you have at home. Try to reproduce one of the pictures.	**<u>Fathers Day</u>** Fathers day is This coming SUNDAY! Use this session to create something special for your father, step father, grandfather, uncle or important man in your life to celebrate fathers day! You might choose to write a cinquain poem, acrostic poem, a letter, make a card, draw a picture, create a 'dad rap' or film yourself talking about why your dad is special to you.	**<u>School Disco</u>** If you can, log in to your google classroom to get the link and join your friends in a dance for the virtual school disco. The theme is Pyjamas!

Term 3 Week 8

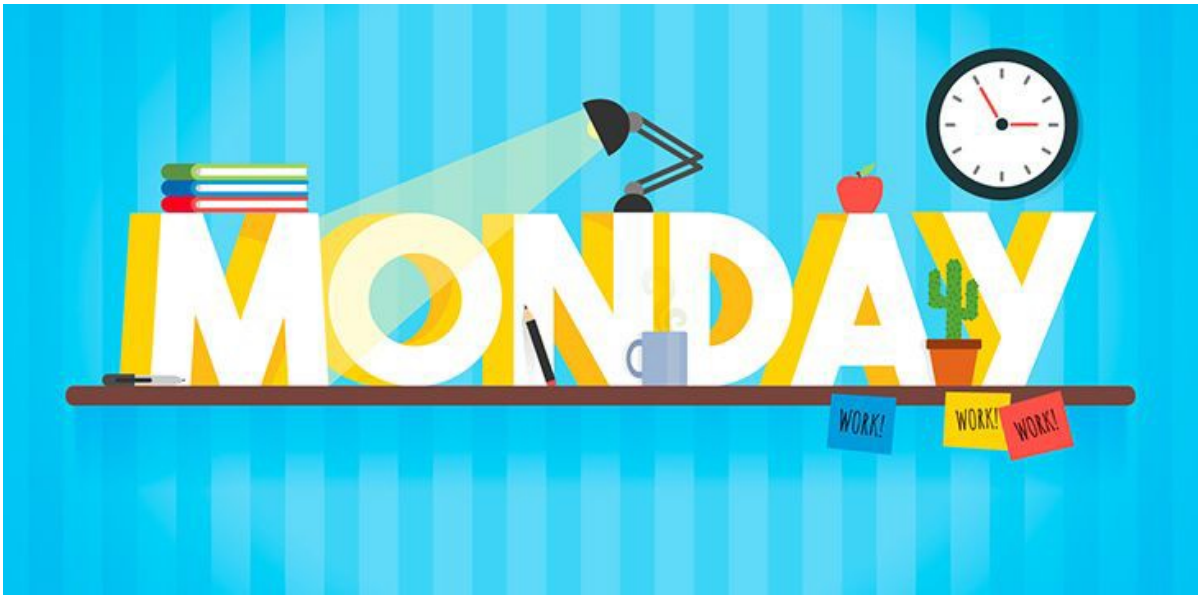
Monday, August 30th, 2021

Daily Gratitude

Name _____

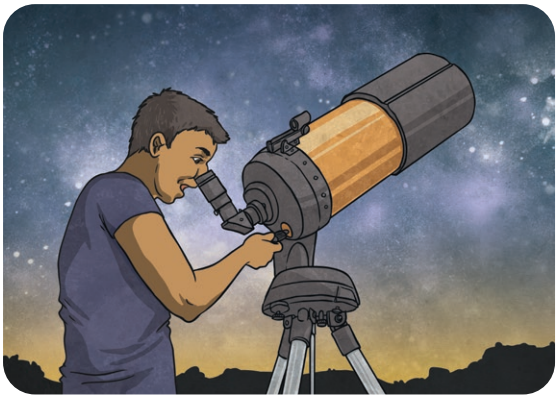
Today's date	- What are three things you are thankful for today? - What are three positive things that happened today? - If you can't identify three positive things, what is something you can change for tomorrow that can make your day better?
__/___/_____ Monday	- - -
__/___/_____ Tuesday	- - -
__/___/_____ Wednesday	- - -

__/___/_____ Thursday	- - -
__/___/_____ Friday	- - -


MONDAY
WORK!
WORK!
WORK!

The Emu in the Sky

If you go out into the night and gaze up at the stars you can find the Emu in the Sky. The Emu in the Sky isn't a constellation in the traditional sense, as it is not really composed of stars. Instead, it is a part of the Milky Way and is made up of the dark shapes in the sky that are defined by light.



To find the emu, look towards the Southern Cross. The space between those stars, that make up our most famous constellation, is also the space where we can find the emu's head. From there, you can see its neck, body and legs stretching across our galaxy and taking shape between the swirling brightness of the Milky Way.

The Emu in the Sky has featured in Indigenous Australian storytelling for thousands of years, passed down through generations. Many different Dreaming stories speak of the emu too. According to Indigenous Australian legend and Dreaming Stories, emus are more than just birds. They are creator spirits, soaring through the skies above and looking down over the land below.

One Dreaming story featuring the emu, tells of a blind man living with his wife in the bush. He is unable to hunt or provide for her, so she must go out each day to collect emu eggs. The man was never satisfied with what she brought home and so he often complained that the eggs were too small.

One day, while out gathering eggs, she came across some very large emu tracks. Hoping that this might mean she would find larger eggs, she followed the tracks to the emu nest. When she got there, she threw stones at the emu to scare it from the nest. However, this just made the large emu angry. It ran towards her and killed her.

Concerned and growing hungry when his wife did not return, the blind man felt around the camp searching for food. He found a bush with some berries on it. He ate the berries and suddenly he could see! With his miraculous new vision, he made spears and a woomera before setting off to find his wife. He found her tracks and the tracks of the emu, so he followed them. When the man found his wife's body and the large emu nearby, he spared the bird and banished its spirit up into the Milky Way. This is where it remains to this day.

In addition to Dreaming stories, the Emu in the Sky also served as a way for Indigenous Australians to mark the passing of time and to determine whether they should go out hunting for emus or if they would be better off collecting their eggs. Depending on the time of year, the Emu in the Sky will appear differently. For some months of the year the emu seems to be running, at other times it is seen as sitting and then there are the times when it becomes almost unrecognisable as the emu shape dips below the horizon and out of sight.

Comprehension Questions for 'The Emu in the Sky'

1. What is the Emu in the sky? _____

_____

2. What famous constellation will help you to locate the Emu in the Sky? _____

_____

3. Find and copy one word from the text that means 'worried' or 'anxious'.

_____

4. In the Dreaming story , who is killed by the emu? _____

_____

5. How did the blind man become able to see and why was his vision described as 'miraculous'? _____

_____

_____

6. In what ways does the emu appear in the night sky:

☐ Standing or Eating

☐ Running or Sitting

☐ Sleeping or Jumping

7. Give one example from the text of how the Emu in the sky is significant to Indigenous Australians._____

_____

Image by: Kerim Beyit

Sentence challenge!

Circle the article(s) in each sentence below.

- The T-Rex came thundering through the bushes.
- They heard an almighty roar.
- A row of sharp teeth appeared above the treeline.

Image by: Kerim Beyit

Question time!

- How do you think the dinosaurs feel when they hear the T-Rex coming?
- What do you think the T-Rex is thinking?
- Which of the dinosaurs do you think is the safest?
- Can you see any similarities between dinosaurs and animals that live on the planet today?
- How has our world changed since the dinosaurs lived?

Image by: Kerim Beyit

Sick sentences!

These sentences are ‘sick’ and need help to get better. Can you help?

- The dinosaur drank the water from the lake. It had skin and horns. It moved its tail in the air.

Image by: Kerim Beyit

Perfect picture!

Can you draw a particular type of dinosaur? Can you think of adjectives to describe what it looks like?

MATHAROO
helping kids jump into maths

MATHAROO Worksheet LP – 26 21

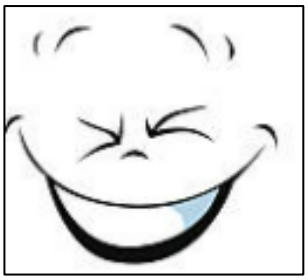
Student Name: _____

Grade:_____ **Date:**_____

1. In a DOUBLES tennis match in the Paralympics, all players will be in wheelchairs. How many **LARGE wheelchair wheels** will there be on that tennis court during that match?

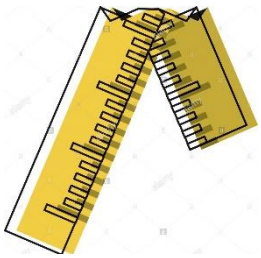
2. The Paralympics begin next week, on Tuesday, 24th August. If one Aussie competitor's event is on the 10th day, on what day of the week will that be?

3. In the Reading Competition, Joseph had read 7 more books than Beth. Beth had read 11 books. How many had Joseph read?



4. Sadie blinks her eyes 11 times per minute. At that rate, how many blinks will she do in 4 minutes?

5. There was 12 mm of rain on Monday, 7 mm on Tuesday and 6 mm each day on both Wednesday and Thursday. How much rain was that in total?



6. Eli dropped his 30-centimetre ruler, and it broke into 2 pieces. One of the ruler pieces was 19 cm long. How long was the other piece?

7. **Open-ended Question:** The **SUM** of Pat's and Paul's ages is 13. What **MAY** their ages be? Give 3 possible answers.

MATHAROO
helping kids jump into maths

MATHAROO Worksheet MP – 26 21

Student Name: _____

Grade:_____ **Date:**_____

1. A new movie, "**PAW PATROL: THE MOVIE**" is due for release on Thursday, 16th September. In the movie, the Mayor, Humdinger, causes havoc, and 6 of the Paws team try to fix things. If each paw has 4 claws, how many claws are there altogether on those 6 members of the Paws team?

Paralympics Australia

2. The Paralympics 2020 begin on Tuesday, August 24th, 2021. Australia is sending 179 athletes with 167 staff to these Paralympics. How many Aussies is that altogether?

3. Six cute ducklings were rescued from a drainpipe by firemen in Adelaide last week. How many webbed feet were there on those ducklings, altogether?

4. A small sea otter in Japan has learnt to hug coloured traffic cones while spinning herself around, to fill in her day. If it takes 3 seconds for the otter and cone to spin one complete circle, how long would it take her to spin that cone 8 times, without stopping?

5. Paralympics champion Dylan Alcott's date of birth is 4th December, 1990. What is his age right now, in years?

6. A very lucky teenager spent every spare minute bouncing a basketball around outside his house. A kind neighbour saw him, and, as a gift, gave him a brand new deluxe model basketball hoop with a backboard, costing $388.95, and a new basketball costing $38.75. Total cost?

7. Strawberries have become cheaper this week. One supermarket is selling 250 gram punnets of strawberries for $2 per punnet. If Janet's mum is making a **HUGE** pavlova that needs 1 kilogram of strawberries, how much would they cost at that supermarket?

8. Olivia Newton-John's "**WELLNESS WALK**" to raise funds for cancer research is seeking sponsors. Jezza has signed up, and hopes to walk 5 kilometres, with 35 sponsors each donating $1.50 per kilometre he walks. How much will he raise if he completes the course?

9. **Open-ended Question:** Write down 3 numbers with 6 in the **thousands** place.

MATHAROO
helping kids jump into maths

MATHAROO Worksheet UP – 26 21

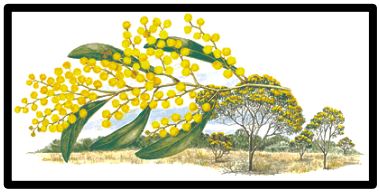
Student Name: _____

Grade:_____ **Date:**_____

1. Dylan Alcott, our paraplegic champion, constantly encourages disabled folk to take part in physical activities. If he makes 3 TV commercials promoting this year's Paralympics, each running for ¾ of a minute, find the total viewing time of all 3 commercials, in minutes and seconds.

2. The 2020 Paralympics will begin on Tuesday, August 24th, and finish on September 5th. 1.2 billion of the world's entire population of 8 billion are disabled in some way. What **FRACTION** of the world's population is that? What **PERCENTAGE** is it? *(Does that surprise you?)*

3. New Zealand singer Lorde has released her third song album, called "**SOLAR POWER**". It contains 14 songs. If Jocelyn plays the first 3 songs on the album, and they take 2½ minutes, 2¾ minutes and $3\frac{1}{8}$ minutes respectively, how long does it take to play them uninterrupted?



4. In the park near James's house, there are 48 wattle trees. Because some of them are in sunny areas, ¾ of those trees are in flower at the moment. How many wattles in that park, then, are <u>yet to blossom</u> this year?

5. Jeff decided to sell his remote control car on eBay. He paid $88 for it 6 months ago. Now that it's second-hand, on eBay he is asking ¾ of the price he paid for it. How much money will he **LOSE** by selling it at that price?

6. How many 15-second advertisements could a radio station cram in to a 3½ -minute commercial break?

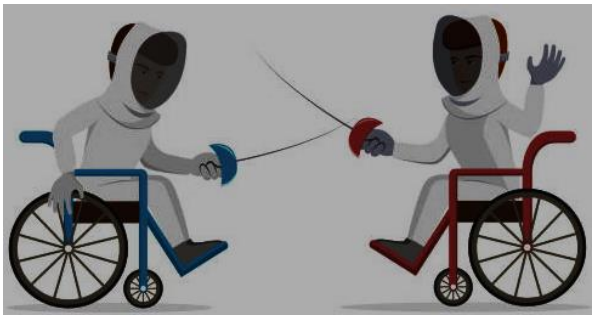
7. To block out the view of a neighbour's junk-filled yard, Tony's mum put up a clothesline filled with 3 bath towels (measuring 67 cm x 130 cm), 5 tea-towels (40 cm x 67 cm) and 4 hand towels (45 cm x 60 cm). Find the **TOTAL AREA** of **ALL** these towels, in square centimetres.

8. <u>**Open-ended Question:**</u> Jake thinks of a number, doubles it and adds 8. His answer is between 50 and 100. What may his **FIRST** number have been? Give 3 possible answers.

MATHAROO Worksheet EXT – 26 21

Student Name: _____

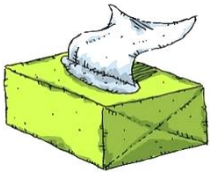
Grade:_____ **Date:**_____



1. The 2020 Paralympics begin on Tuesday, 24th August. On 5th August, wheelchair fencing runs from 9 am to 2 pm, wheelchair basketball from 2:45 pm to 6:45 pm and wheelchair rugby from 11:30 am to 3:45 pm. Show these lengths of games on a graph.

2. Singer Ed Sheeran has released a new album, called "=". (Yes, that's an "equals" sign.) It will be released in Australia on October 29th, and has 12 tracks. If Jenna orders the album for $19.80, but gets a 15% discount, how much does she pay?

3. A used tissue, into which soccer champion Lionel Messi cried, has been sold at auction for a million dollars. A normal box of 200 tissues sells for $1.10. Find the "normal" price of one tissue. Then calculate the multiple of that amount that the Messi tissue earned at auction.



4. A recent comparison by Choice magazine found that the cost at the "cheaper, smaller" supermarket for a particular basket of goods was $109.64. The cost at one of the larger supermarkets for an equivalent basket of goods was 17% higher. What was that higher cost, and what was the actual difference in price?

5. A newspaper made an error last week, saying that $12.2 million was spent on a project. The **ACTUAL** amount spent on that project was $12.2 billion. Find the **DIFFERENCE** between those two amounts.

6.Scuba diving was mentioned in last week's news. The term "**SCUBA**" stands for "*Self-Contained Underwater Breathing Apparatus*". What **FRACTION** of **ALL** the letters in that long name (ignore the hyphen!) is the short, abbreviated name "scuba"?

7. The rising time for the planet Jupiter last Friday was at 5:42 pm, and the setting time was the next day at 7:16 am. On the same day, the sunrise here at one place on earth was 7:01 am and sunset was at 5:48 pm. Which of these two planets had the longer range of time between rising and setting? By how many hours and minutes?

8. <u>OPEN-ENDED QUESTION</u>: Ben's school has a lamington drive for charity. The lamingtons are cube-shaped. In how many ways could Ben pack 12 lamingtons into differently-shaped boxes. Draw a diagram for each possible arrangement.

Matharoo ANSWER SHEET

for Matharoo 26 21 sheets for week beginning 23rd August, 2021

ANSWERS – Matharoo Lower-Primary Worksheet LP 26 21

1. 8 large wheels
2. Thursday
3. 18 books
4. 44 blinks
5. 31 mm (Note: 6 mm each day for Wednesday and Thursday)
6. 11 cm
7. Various answers

Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

ANSWERS – Matharoo Mid-Primary Worded Worksheet MP 26 21

1. 96 claws
2. 346 people
3. 12 webbed feet
4. 24 seconds
5. 30 years old
6. $427.70
7. $8
8. $262.50
9. Various answers

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

ANSWERS – Matharoo Upper-Primary Worded Worksheet UP 26 21

1. 2 minutes 15 seconds
2. 3/20; 15%
3. 8 and 3/8 minutes
4. 12 wattles
5. $22 loss
6. 14 commercials
7. 50,330 square centimetres
8. Various answers

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

ANSWERS – Matharoo Extension Worded Worksheet EW 26 21

1. Various graphs
2. $16.83
3. 0.55 of a cent; Multiple of 1,818,181.82
4. $128.28; Difference of $18.64
5. $12,187,800,000 difference
6. 5/41
7. Jupiter; 2 hours 47 minutes
8. Various answers and diagrams

Correcting Spelling Mistakes 1

The spelling mistakes in these sentences have been circled. Write the correct spelling for each circled word in the box.

1. The athleet won gold at the sports carnival.
2. I felt nervus as I waited for the race to start.
3. He sat down in a cumftabul armchair.
4. Sarah carefully opened the treshure chest.
5. He made a good choise.
6. She caught a tropical diseese and had to go to the hospital.
7. I shouted lowdly at the referee.
8. The sercumfrense of the circle was 18 centimetres.

Each sentence has one word that is incorrect. Write the correct spelling of the word in the box.

1. She stagered around feeling dizzy and confused.
2. It was a perfict day at the beach.
3. I heard an incredable story on the news about a boy surviving an explosion.
4. You will recieve a certificate if you complete the course.
5. Many people spend their holidays in foreign countrys.
6. The man cheerfuly whistled a familiar tune.
7. I wondered happily through the ancient house.
8. It is important to have confidents in your own abilities.

Correcting Spelling Mistakes 2

The spelling mistakes in these sentences have been circled. Write the correct spelling for each circled word in the box.

1. In the end, he made the right disishon.
2. The school fair was a great suckses.
3. I couldn't stop larfing!
4. Answer the qwestions carefully.
5. Do you have all the ingredents you need for the recipe?
6. He cleaned the kitchen thuraly.
7. A misterios noise came from the old abandoned house.
8. It is irasponsable to go off without telling someone where you are going.

Each sentence has one word that is incorrect. Write the correct spelling of the word in the box.

1. Laura gigled as she listened to the comedian's jokes.
2. My sandle broke and I had to walk with bare feet.
3. There are many interesting books in the libary.
4. The dialog between the two characters built the tension in the play.
5. I was feeling misrable after losing my private diary.
6. The girl's disapearance was very distressing for her relatives.
7. The ancient temple had huge decorative colums.
8. She shreeked loudly when she saw the hideous monster!


TUESDAY

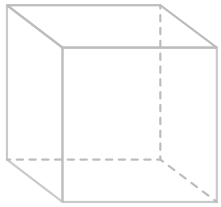
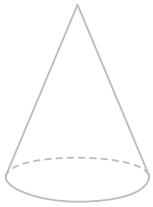
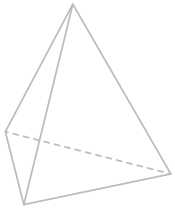
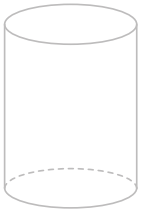
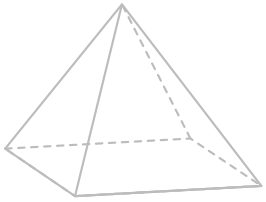
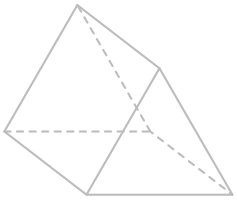
Image by: Kerim Beyit

Story starter!

- The dinosaurs all gave a simultaneous roar. It was coming...
- Moments before, the lake had been quiet and peaceful. As the golden sun rose above the shadowy, jagged mountains on the horizon, creatures came from far and wide to enjoy their early morning drink from the tranquil pool. All they could hear was the gentle lapping of water and contented grunts as thirsts were quenched.
- Then they had heard them: footsteps in the distance. Thump...Thump...Thump...It could mean only one thing: a T-Rex...
- Can you continue the story of the dinosaurs?

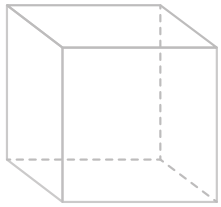
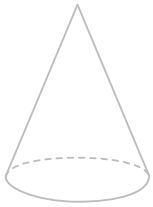
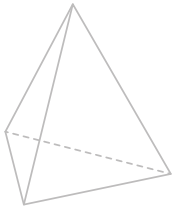
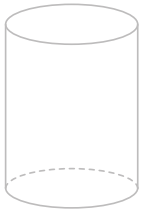
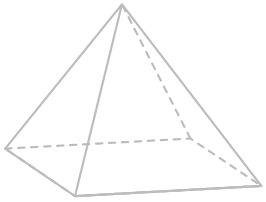
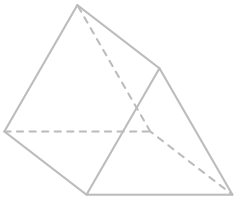
Name: _____ Date: _____

3D Object Properties

Trace the shape	Name	Edges	Faces	Vertices
				
				
				
				
				
				
				

Name: _____ Date: _____

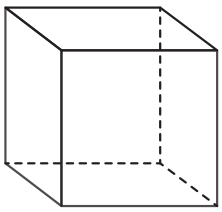
3D Object Properties

Trace the shape	Name	Edges	Faces	Vertices	Curved surfaces	Flat surfaces
						
						
						
						
						
						
						

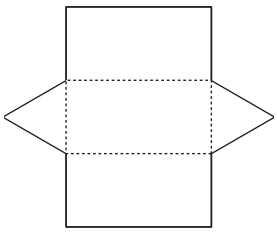
Name _____ **Date** _____

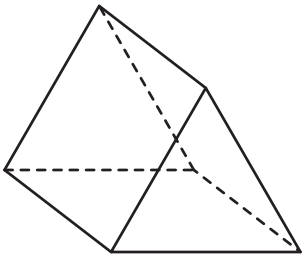
Nets of 3D Objects (A)

1. Match the 3D object to its name and net.

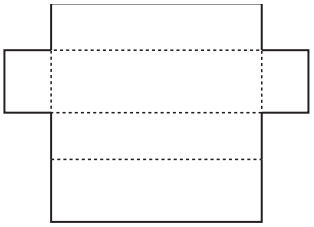


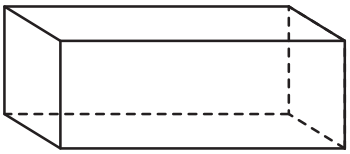
rectangular prism



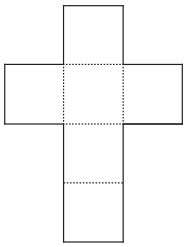


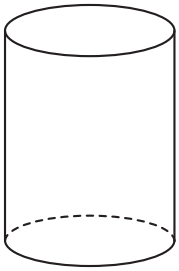
cube



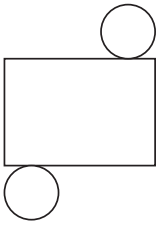


cylinder





triangular prism



2. Use the net to answer these questions.

a) If 1 is the base, what number is the top?

_____

b) What numbers are on the sides of the shape?

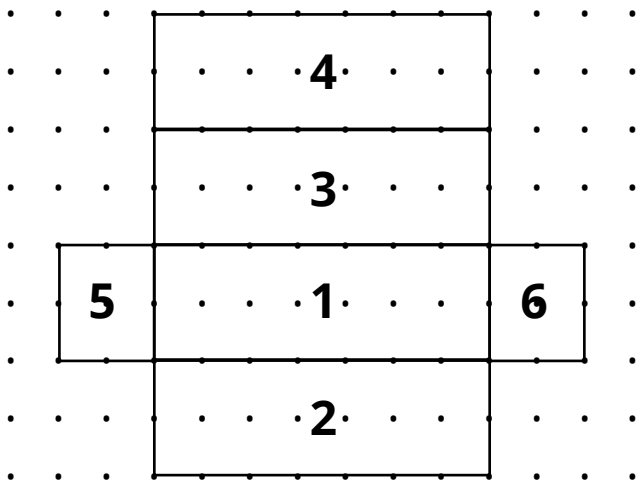
_____

c) If you stood the shape up with the 5 as the base, what number would be on top?

_____

d) If 3 is the base, what number is on top?

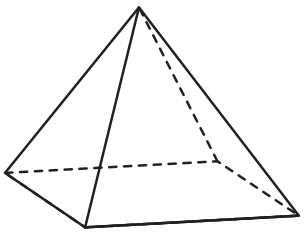
_____



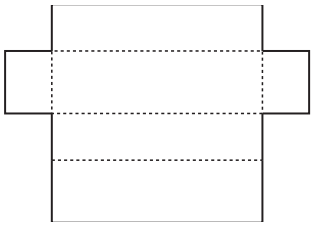
Name _____ **Date** _____

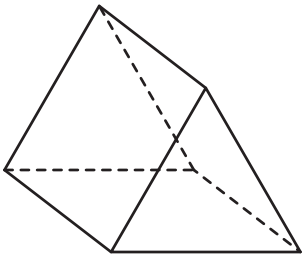
Nets of 3D Objects (B)

1. Match the 3D object to its name and net.

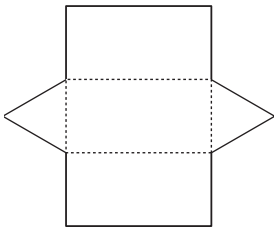


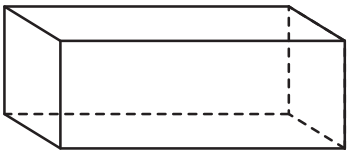
rectangular prism



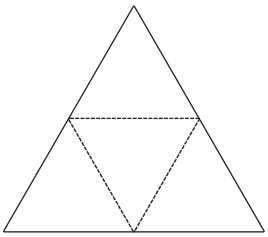


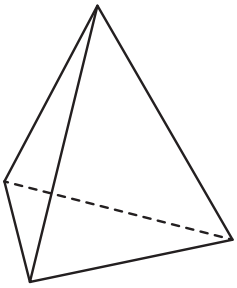
square-based pyramid



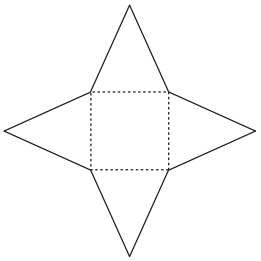


triangular-based pyramid





triangular prism



2. Use the net to answer these questions.

a) If 1 is the base, what numbers are folded to make the top pieces?

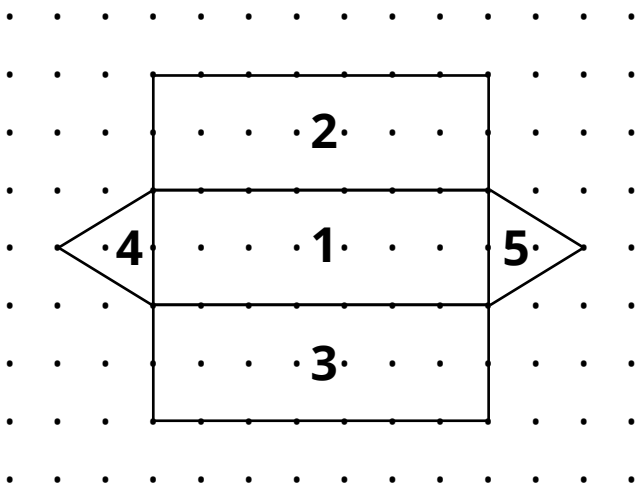
_____

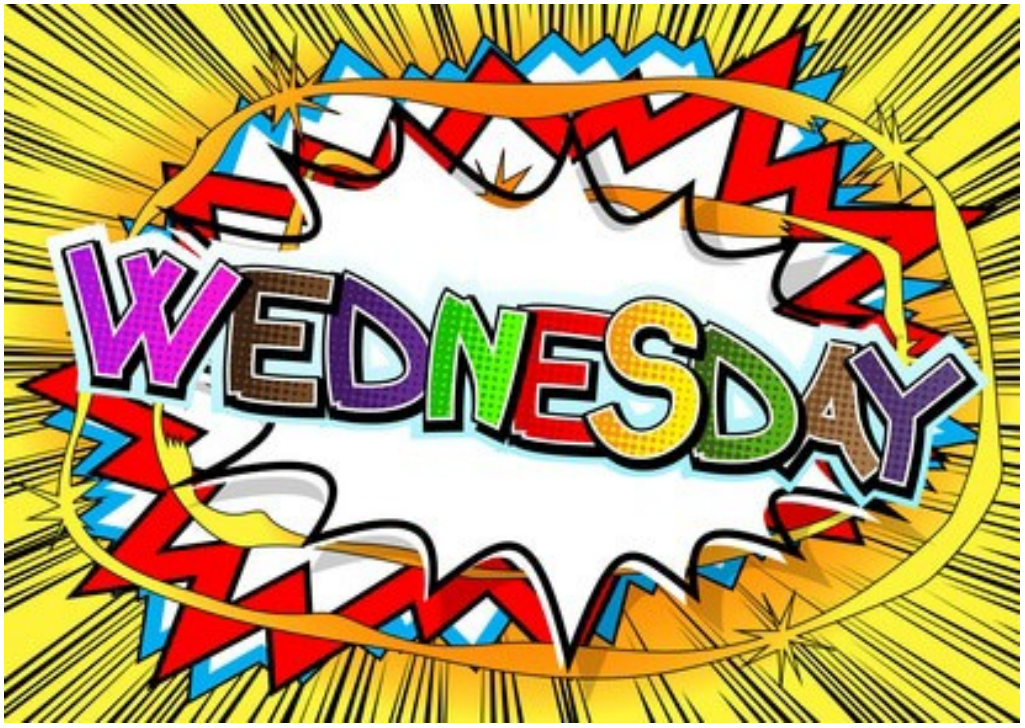
b) If 1 is the base, what numbers are the sides?

_____

c) If you stood the shape up with the 4 as the base, what number would be on top?

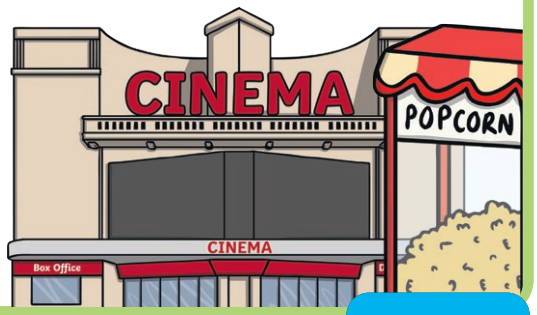
_____




WEDNESDAY

Books Are Better Than Movies

For:	Against:
• Books let the reader use their imagination. • Books tell a story with descriptive words and pictures. • Books allow the reader to enjoy some relaxing time alone.	• Movies can be enjoyed without needing to think too much. • Movies tell a story with a variety of visual and audio elements. • Movies can be enjoyed together with family and friends.



Maths Investigation –

3D Object

Make Me a Radical Robot!

The Scenario

Tommy from Tommy's Toy Treasure Trove (your local toy store) is feeling rather bored with the toys in his shop. He wants to design a new and interesting toy robot that children will desperately want to buy. The problem is, he doesn't have any ideas!

To help him find some inspiration, Tommy is holding a competition for the children of the town to design a new and exciting toy robot. Tommy will choose the best design, create the new toy in his factory, then sell the product in his toy store.

You have decided to enter Tommy's competition.

The Task

Design and create a 3D robot that children will love to be entered in Tommy's design competition.

Follow the competition submission rules and the size and shape guidelines, set out below.

Competition Submission Rules

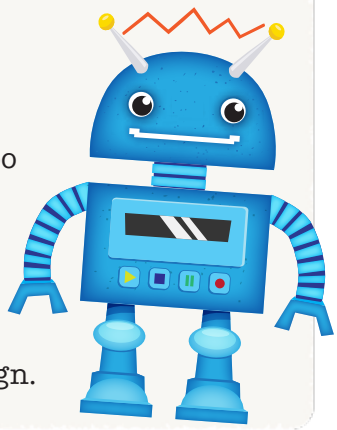
Tommy has asked that each competition entry submits the following:

- A labelled, 2D diagram of the design (drawn to scale), which shows the various features of the robot.
- A materials matrix which explains which materials should be used for each part of the robot.
- A coloured, 3D model of the robot which shows what the finished product might look like.
- A persuasive poster to be displayed at Tommy's, convincing parents to buy the robot for their children.

Size and Shape Guidelines

Tommy is looking for a new, fun and creative toy, so he doesn't want to set too many design restrictions. However, he has set down the following size and shape guidelines for the competition:

- Tommy would like the robot to be no taller than 30 centimetres.
- Tommy would like to see both prisms and pyramids used in the design.
- Tommy would like to see at least five different 3D objects used in the design.



The Procedure

1. Check your understanding of the task

Carefully read through the task, the list of competition submission rules and the size and shape guidelines. If there are any instructions that you do not understand, ask your teacher to explain them to you.

2. Brainstorm some possible robot designs and create a design overview

Using the brainstorming worksheet, play around with some possible designs. Don't worry if your ideas seem a little crazy! After the brainstorm, record your best ideas on the design overview template.

3. Draw a labelled, 2D diagram of your design (drawn to scale)

Draw a detailed representation of your design idea on the worksheet provided. Label any special features on the diagram and explain their function e.g. when you press this button, the robot's eyes flash.

4. Compete the materials matrix

Consider which materials should be used for each part of your robot. Complete the materials matrix provided to explain to Tommy which materials should be used for each part of the robot and why.

5. Draw and construct the nets required to create your model

Draw, colour and construct the nets of the 3D objects required to build your model. Ensure that the size of the nets corresponds with the size of the 3D objects that you will need.

6. Build your 3D robot model

Construct a model of your robot by joining all your nets together. Add any additional features to the outside of the model as necessary e.g. switches, buttons, knobs.

The Materials

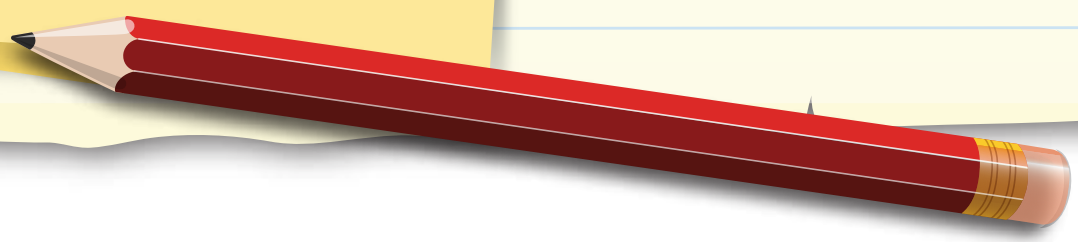
- Cardboard
- Coloured markers or paint
- Scissors
- Adhesive supplies (glue, tape, blu-tac)

7. Plan and create your persuasive poster

Tommy's goal is to sell, sell, sell! Plan and create a persuasive poster to hang in his store to convince parents to buy this new and interesting toy for their children. Don't forget to use persuasive devices!

8. Present your design

Present your diagram, model and poster to the class. Explain how you met the competition submission rules and the size and shape guidelines.

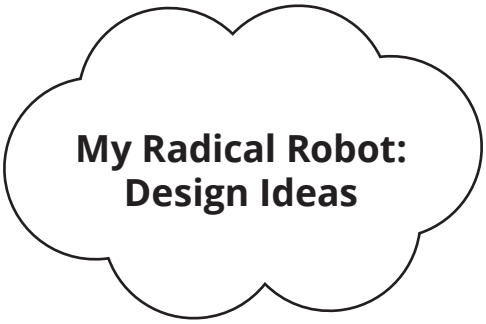


Name _____ **Date** _____

Design Brainstorm

In the space below, record some ideas for your robot design. You might like to think about:

- the size of your robot
- the 3D objects that will make up your robot
- the colours or patterns on your robot
- the materials your robot will be made from
- the new, fun and interesting features your robot will have.



Name _____ **Date** _____

Design Overview

Use the template below to record the key features of your radical robot design.

Size (in cm)	3D Objects
Height: Width: Arms/Legs:	Prisms: Pyramids:
Colours and Patterns	**Materials**
Fun Features	**Simple Design Sketch**

Name _____ **Date** _____

2D Diagram

In the box below (or on a separate page), draw a two-dimensional diagram of your radical robot design. You will need to:

- use an appropriate scale, according to the measurements you have decided upon
- label the special features of your design and briefly explain their function
- colour your design according to the colours you have decided upon.

Scale: _____ = _____

Name _____ **Date** _____

Materials Matrix

Carefully consider which manufacturing materials should be used for each part of your robot. Complete the materials matrix to explain to Tommy which materials should be used for each part of your robot and why.

Part of robot	Choice of material	Reason for choice

Name _____ **Date** _____

Reflection

1. Did you enjoy working on this investigation? Give reasons to explain your answer.

2. Did you face any challenges during the investigation? If so, how did you overcome them?

3. How do you feel about your robot design? Is there anything you would change?

4. What new knowledge and skills did you learn by completing this investigation?

5. Circle the statement that best suits how you feel about working with 3D objects.

a) I feel very confident working with 3D objects.
b) My understanding of 3D objects is improving.
c) I still need some help when working with 3D objects.

Teacher Notes

Rationale

Mathematics investigations open students' minds to the possibility of multiple approaches, multiple outcomes and multiple solutions. When linked to the world in which they live, open-ended investigations can help students see the relevance of mathematics within their lives. They also provide wonderful opportunities for differentiation, enabling students to feel confident and successful as they engage with tasks at their own individual level.

Overview

This mathematics investigation has been designed to accompany a unit of work on 3D objects. It requires students to apply their knowledge and understanding of 3D objects to a real-world situation.

Objective

To design a radical robot, taking into account a list of size and shape guidelines.

Duration

Approximately five 60 minute lessons

Prior Learning

Before commencing the investigation, students should be familiar with the following concepts:

- drawing scaled representations of 2D shapes
- drawing and constructing nets of 3D objects.

Differentiation: Supporting Students

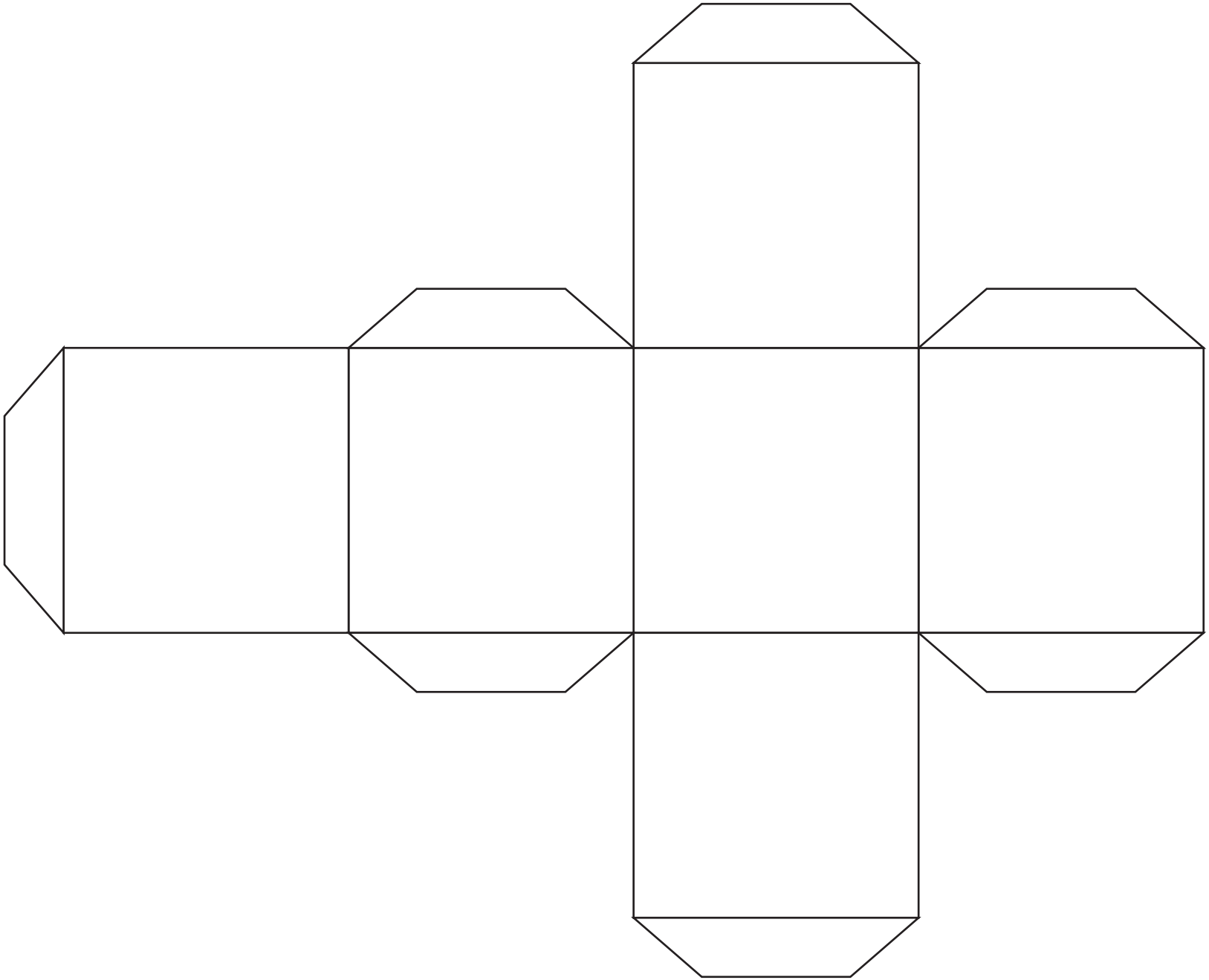
Less confident students could be supported in their learning by allow them to consult with a teacher or teacher aide during the brainstorming and designing process. Alternatively, the task could be simplified by allowing less confident students to construct their robots using only a small number of simple prisms.

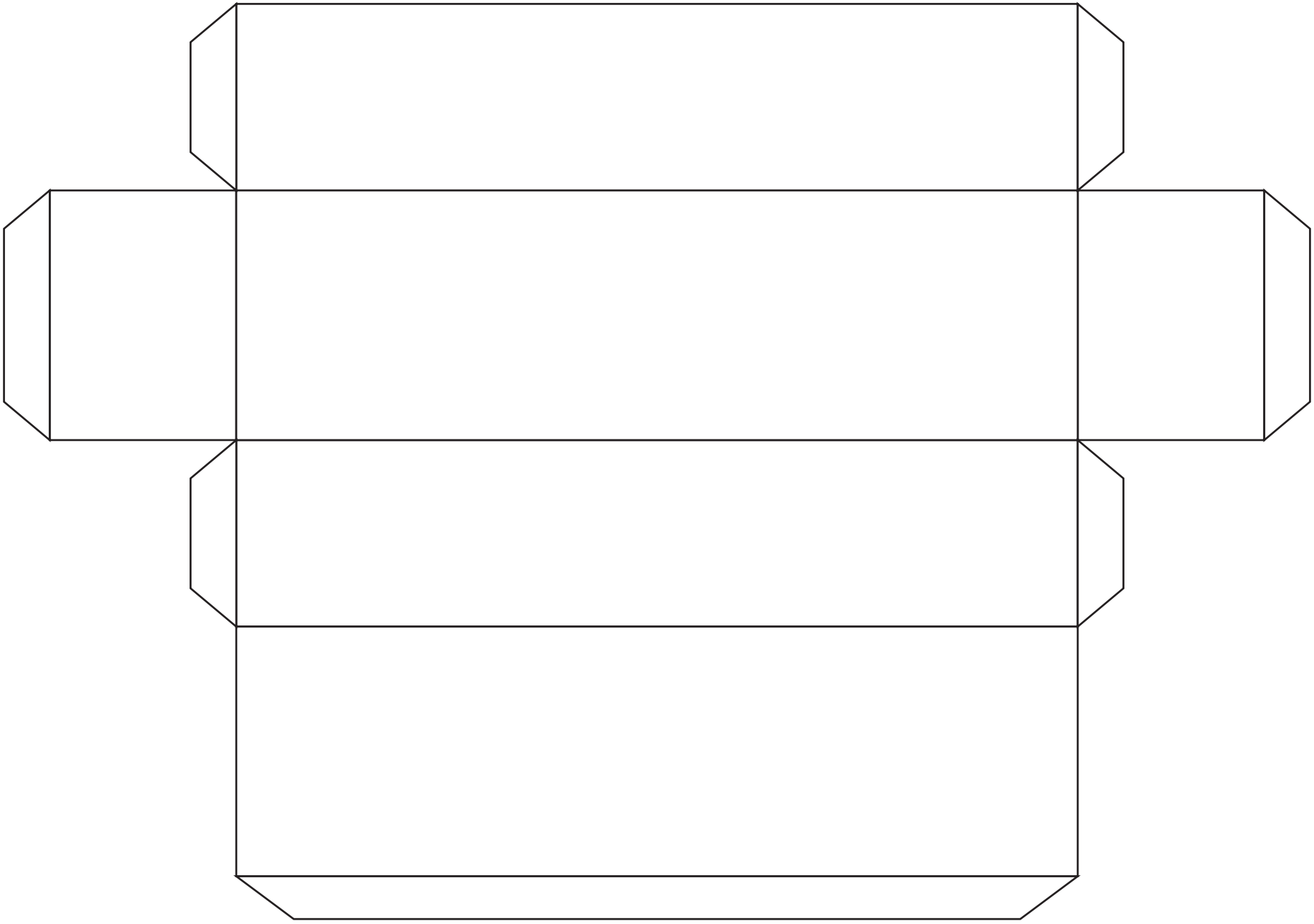
Differentiation: Extending Students

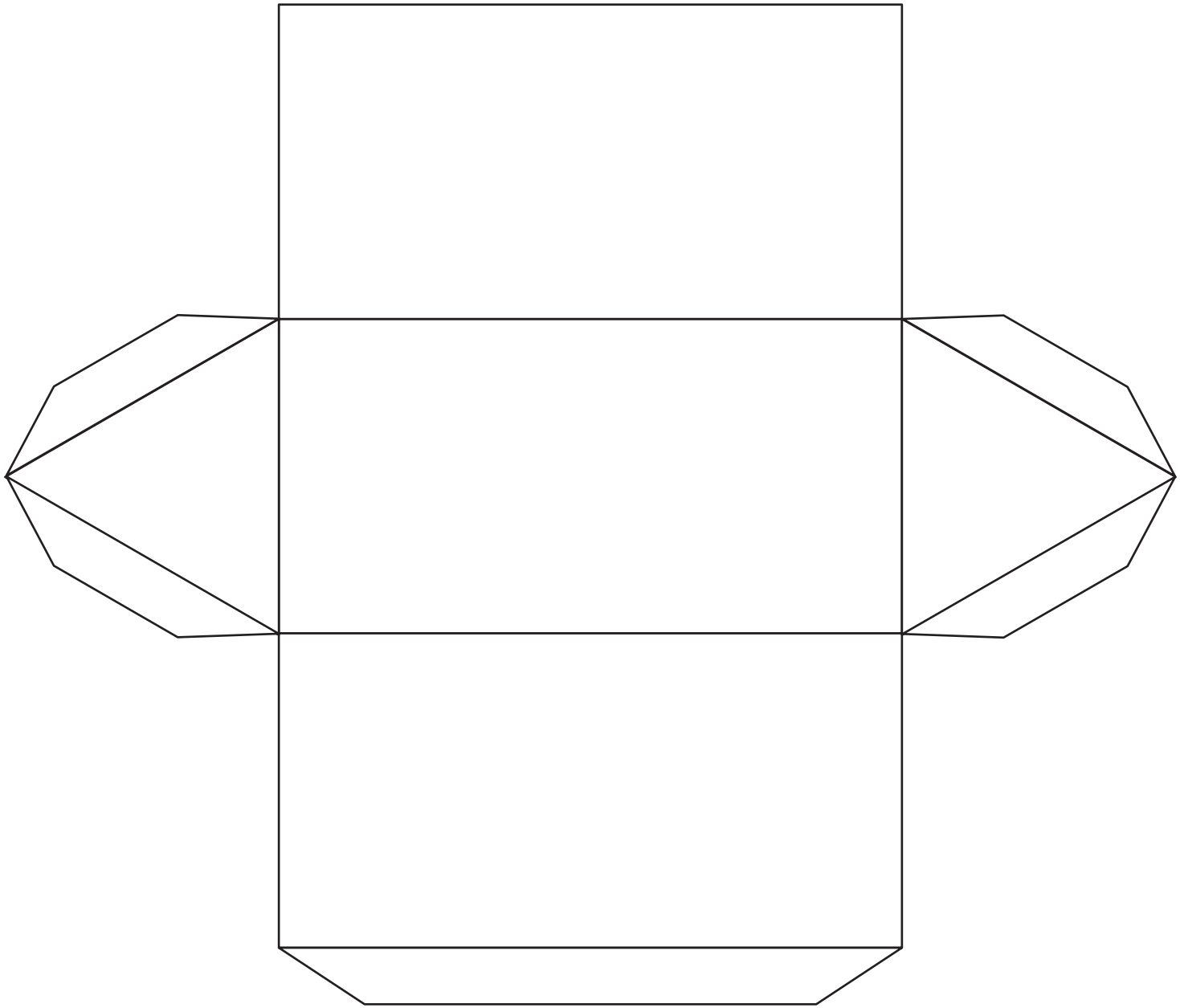
More capable students could be encouraged to extend their learning by using more sophisticated 3D objects in their robot design e.g. cones, cylinders, tetrahedrons. Students could also be encouraged to use technology to create a television commercial to advertise their robot.

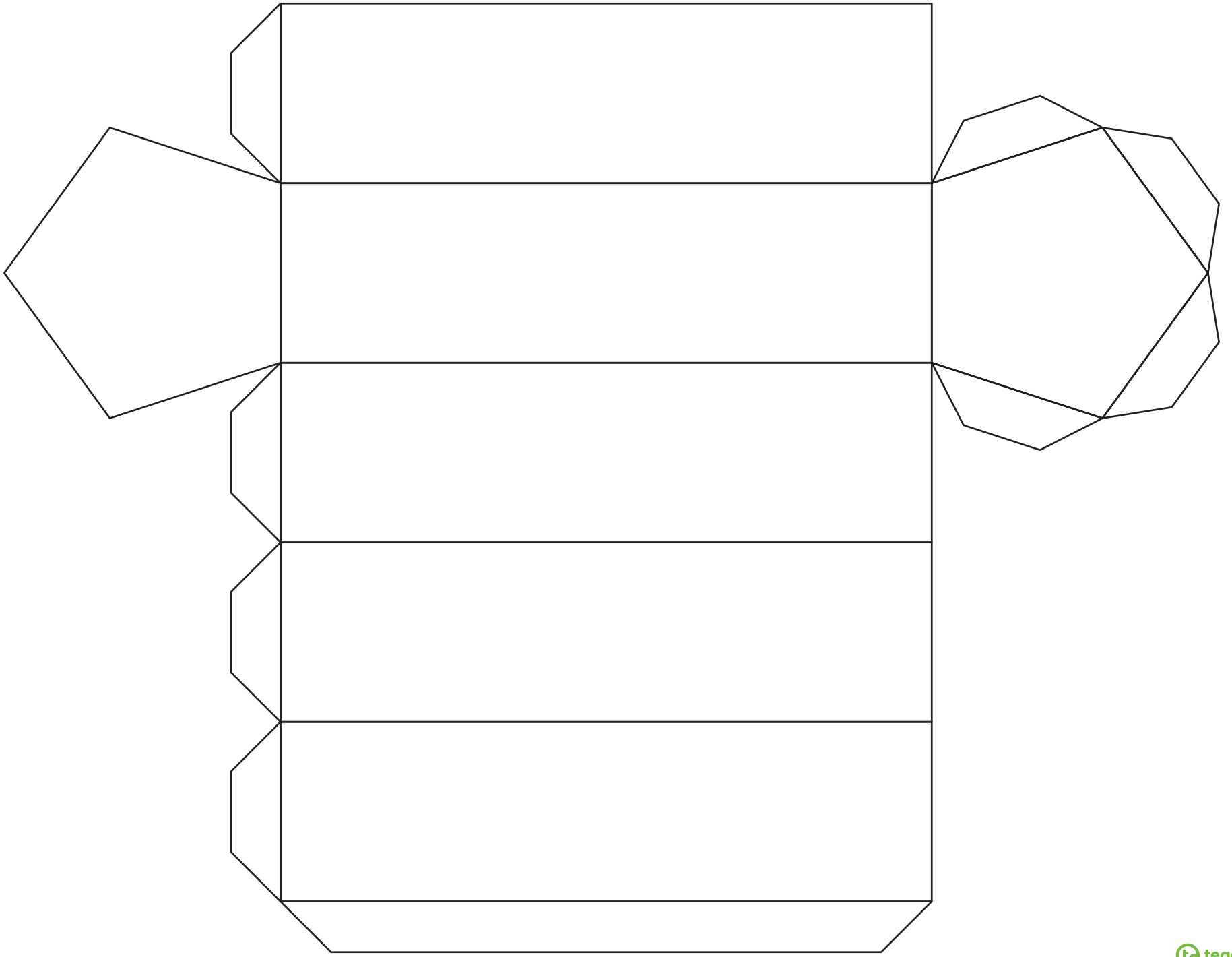
Monitoring Student Understanding

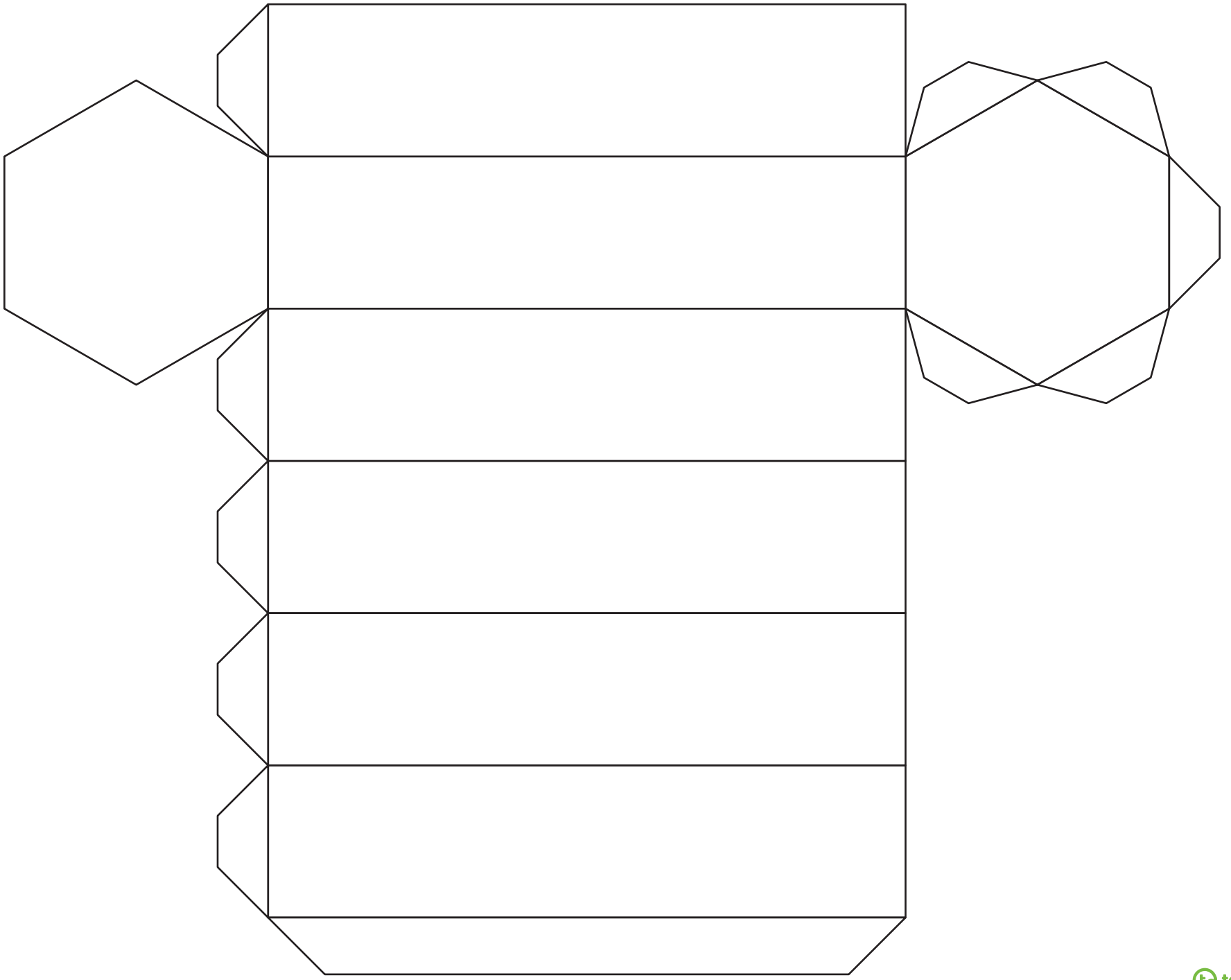
Due to the open-ended nature of this investigation, students' responses will vary significantly. For this reason, no answer sheet has been provided. Teachers must therefore check that each student has completed the investigation according to the task requirements.

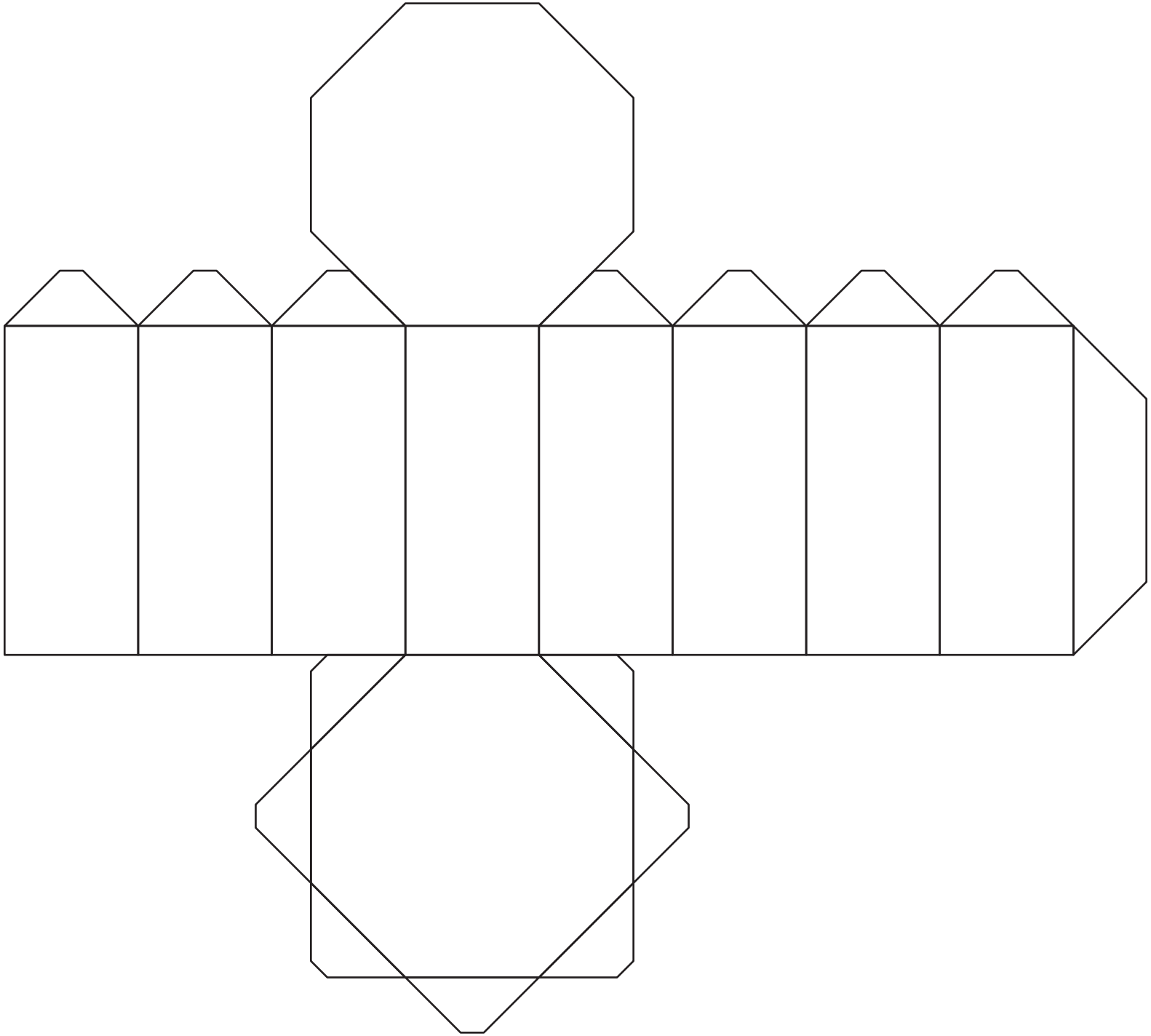


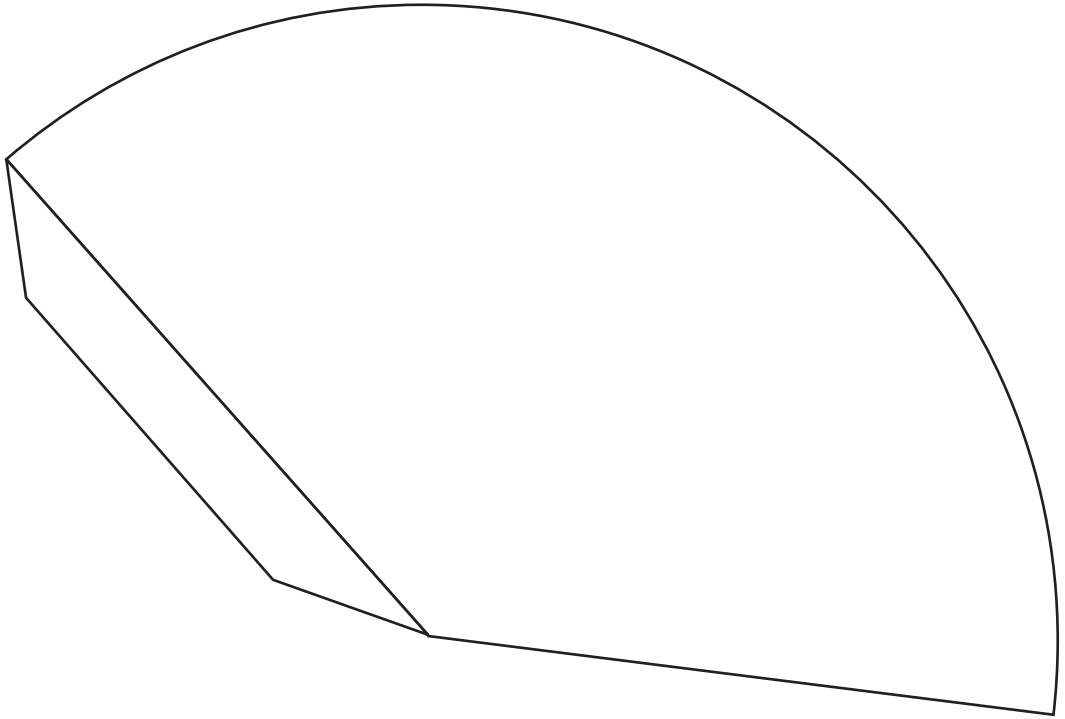


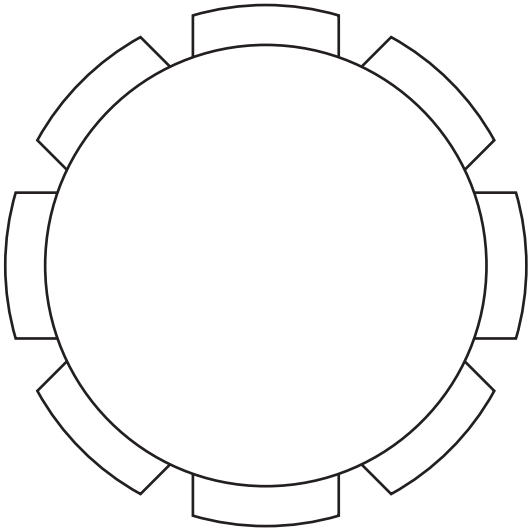


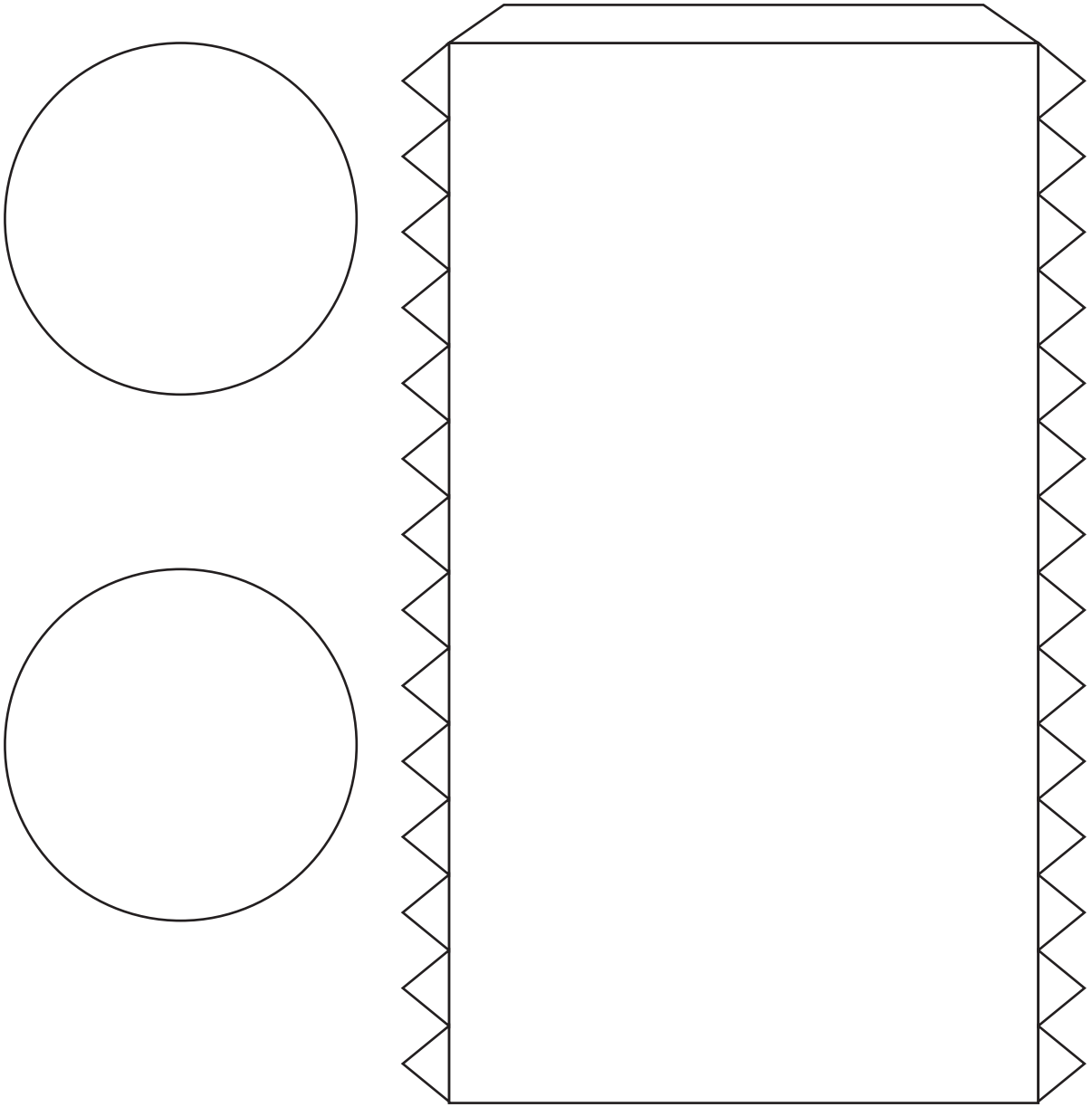


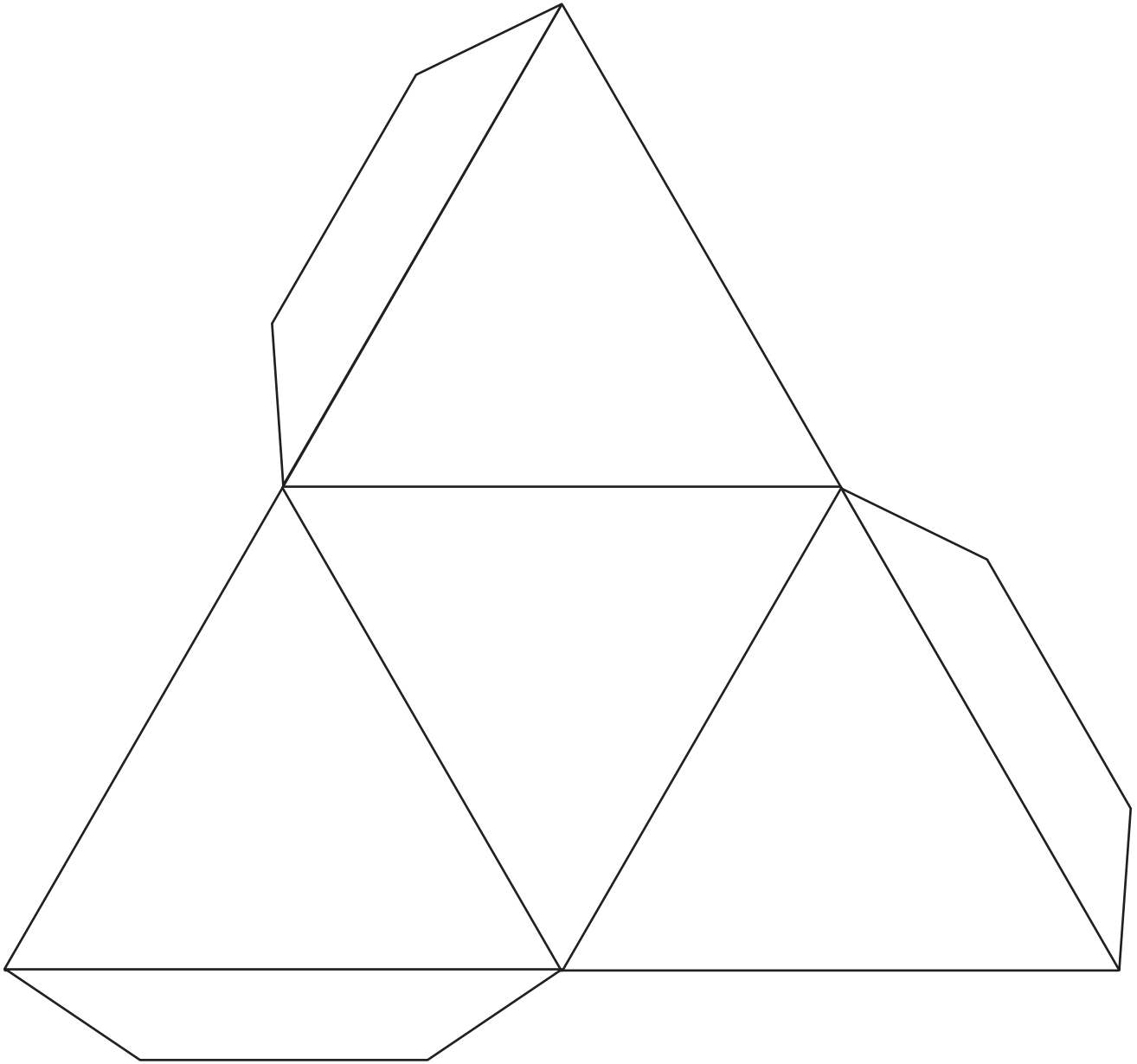


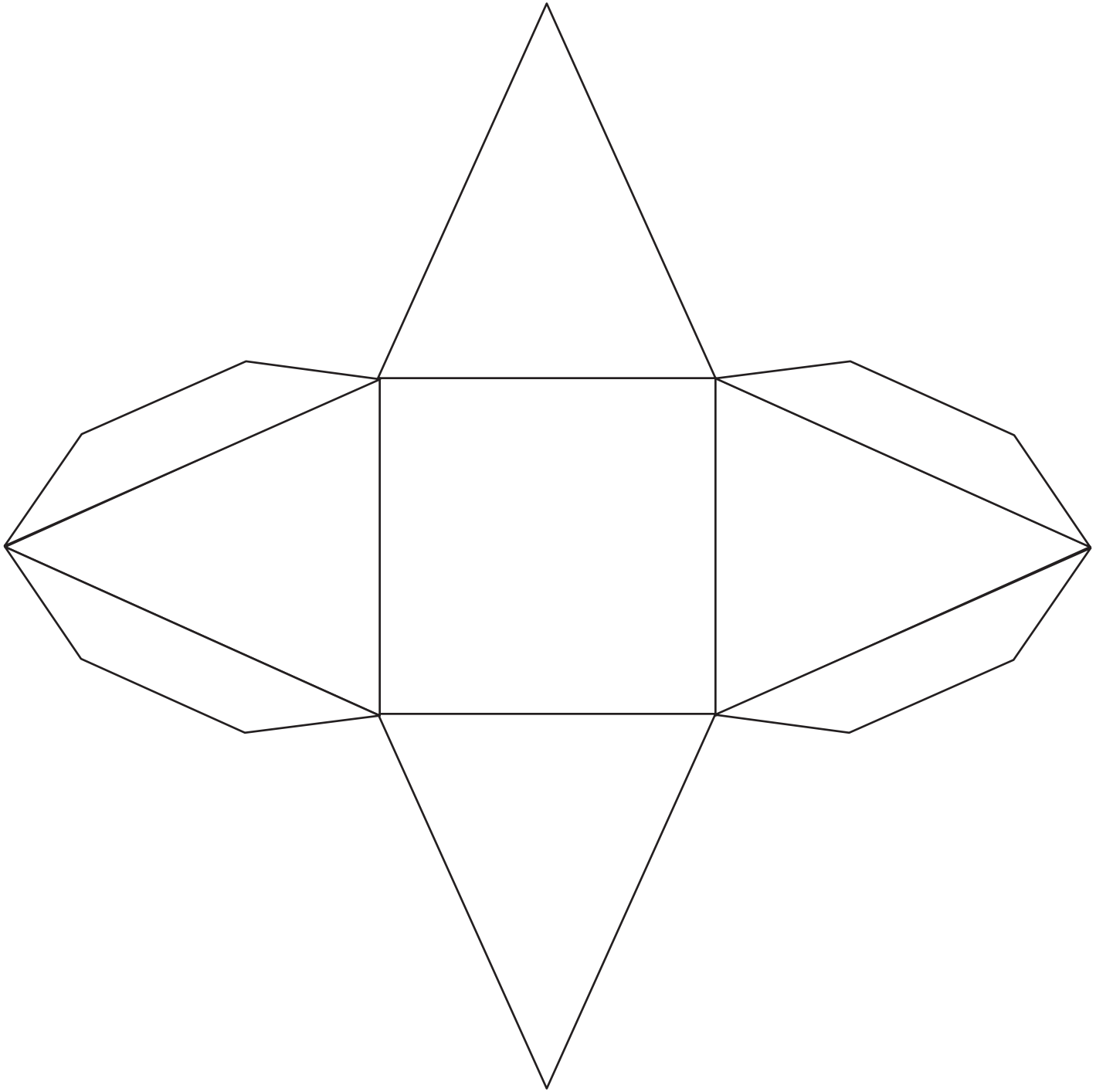


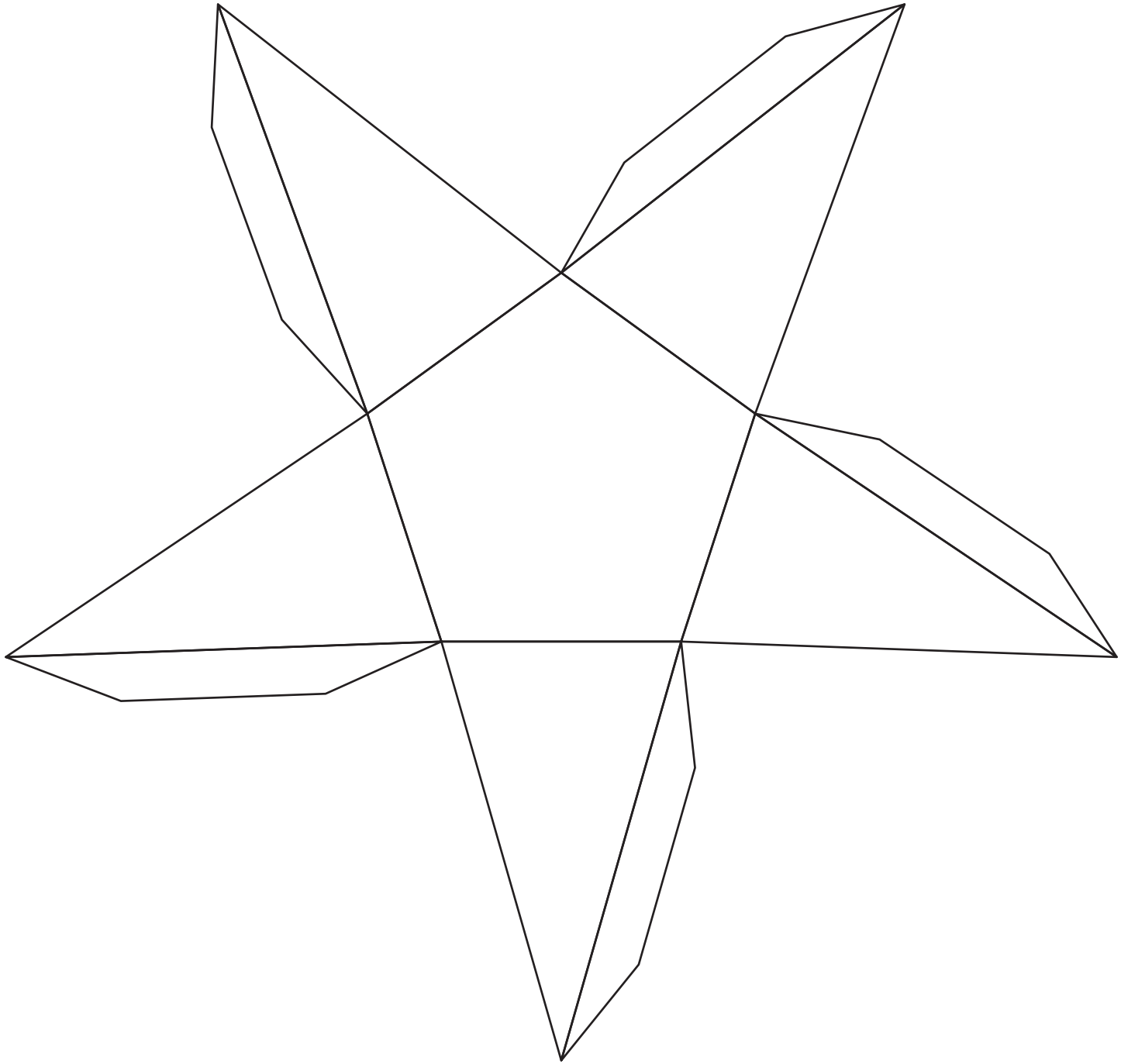


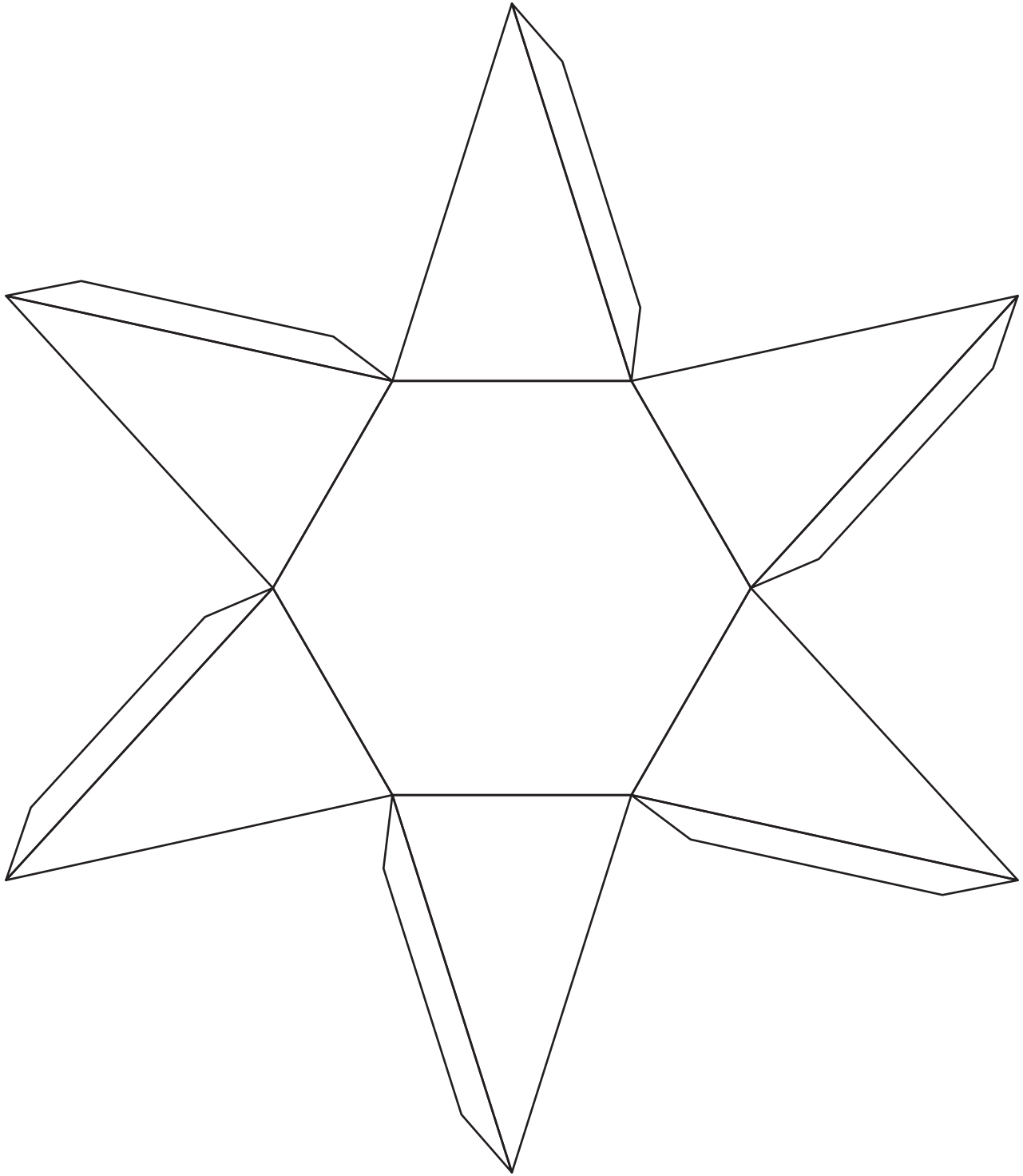


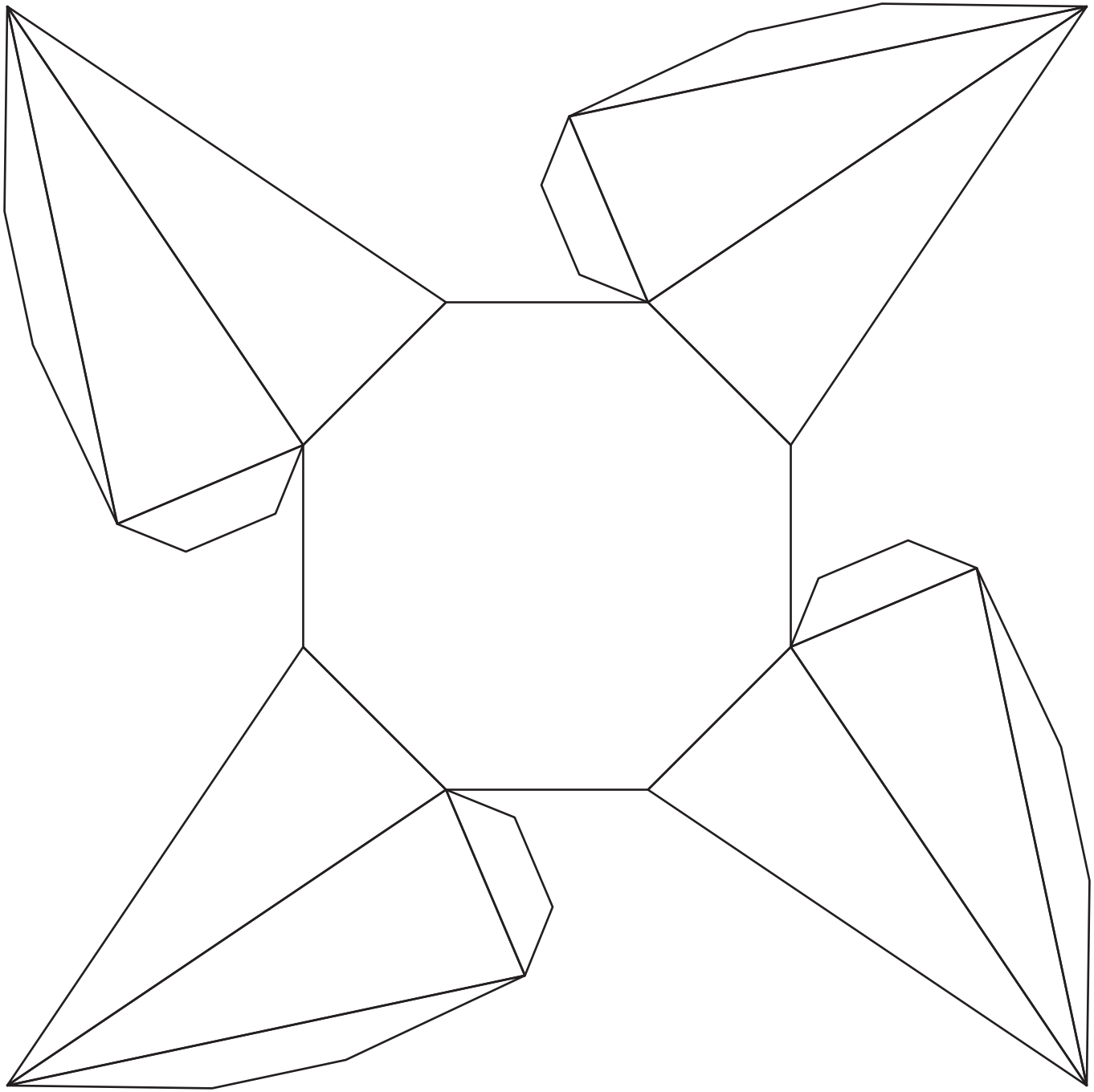




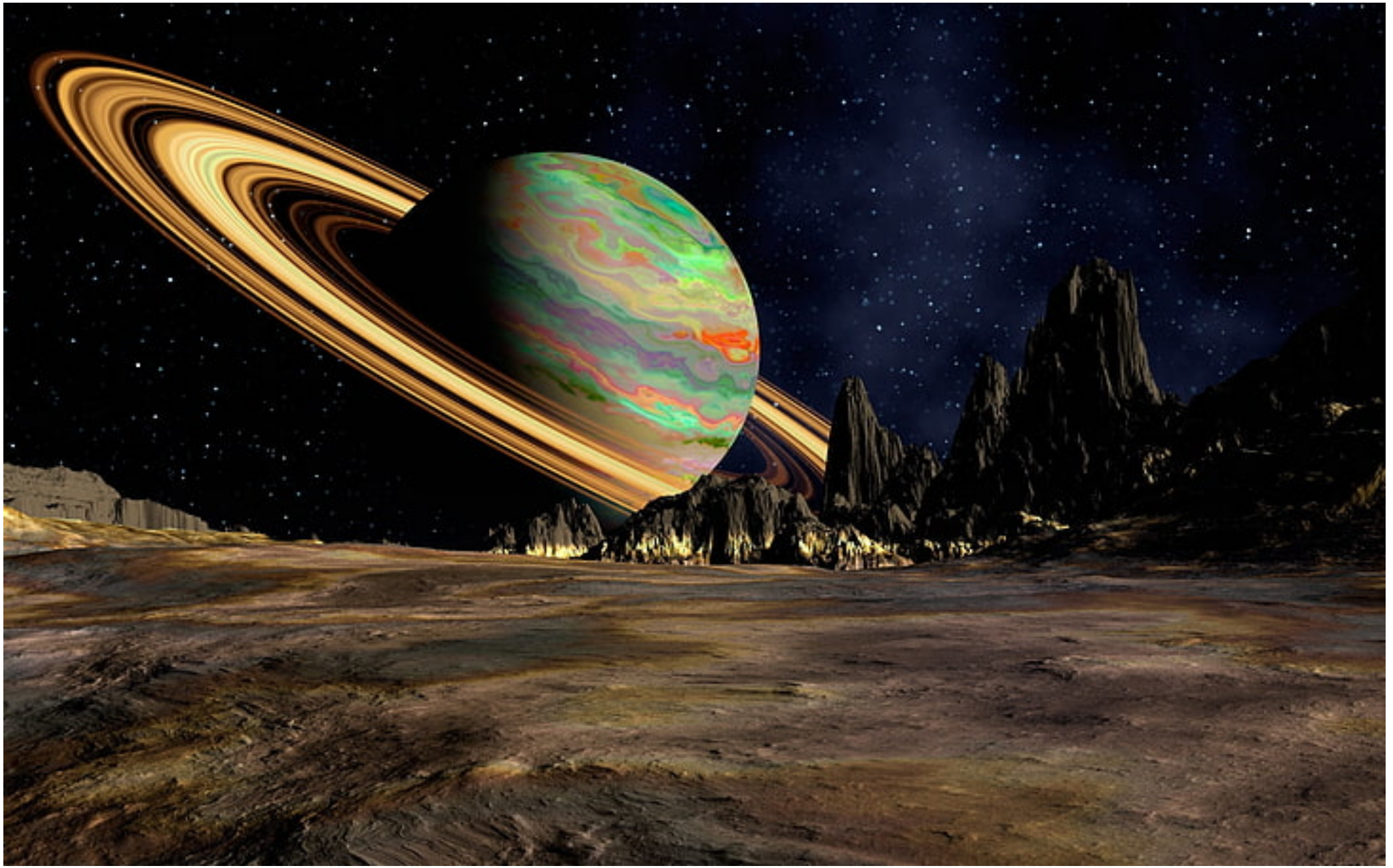








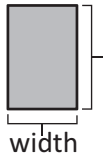
Using art supplies you have at home (pencils, crayons or paint) try to reproduce one of the pictures below.



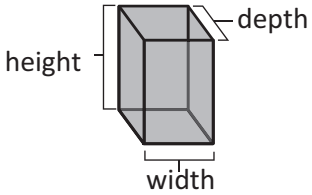

THURSDAY

3D shapes – introduction

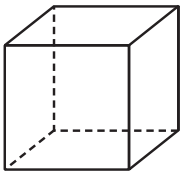
2D shapes have 2 dimensions – width and height. They're flat.



3D shapes have 3 dimensions – height, width and depth.
Sometimes we call them solids. When we draw them, we often show them as transparent or as skeletons so we can 'see' all their sides.
3D shapes can have all flat sides, all curved sides, or a mixture of both.

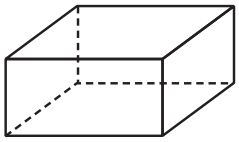


1 **Look at these 3D shapes. Which 2D shapes form their sides? If it helps, find the solids in your classroom and study them.**



a This is made of:

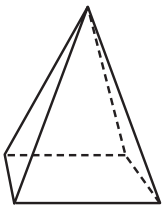
____ squares



b This is made of:

2 _____

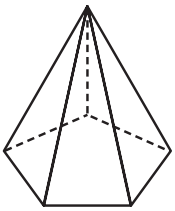
4 _____



c This is made of:

1 _____

____ _____



d This is made of:

____ _____

____ triangles

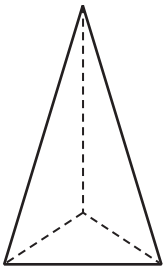
The 2D shapes are the **surfaces** of a 3D shape. The **edge** is where 2 surfaces meet. The **point** where 2 or more surfaces meet is called the **vertex**. If we're talking about more than one vertex, we call them **vertices**.

2 **Study the shape and answer the following:**

a How many surfaces does this shape have? [ ]

b How many vertices? [ ]

c How many edges? [ ]

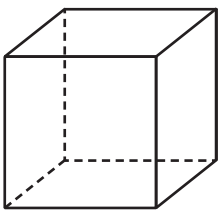


3 **Have these questions been answered correctly? Correct any mistakes:**

a How many surfaces does this shape have? [*6*]

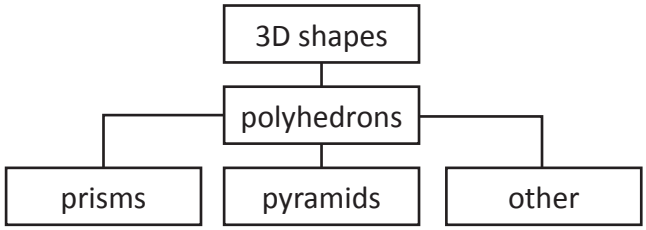
b How many vertices? [*12*]

c How many edges? [*8*]



3D shapes – polyhedrons

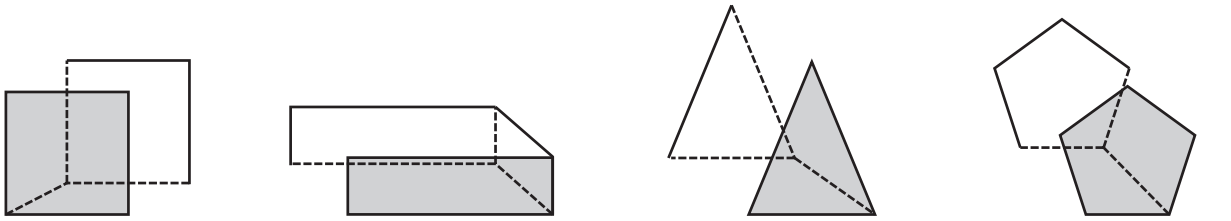
Some 3D shapes are polyhedrons. This means each surface is a polygon. The polyhedrons we most commonly come across are pyramids and prisms.



Prisms have identical parallel faces joined by rectangles. Boxes are a good example of prisms – have a look in your kitchen cupboard at home at the cereal and pasta boxes.

Most prisms are named after their end faces (e.g. rectangular prism, triangular prism).

1 **Finish these prisms by ruling the missing edges. Name them according to their faces. The first one has been done for you.**



a *cube or square* prism **b** _____ prism **c** _____ prism **d** _____ prism

2 **Count the number of sides on each grey face. Now count the number of rectangular faces each shape has. What do you notice?**

3 **Use classroom equipment such as geo shapes, polydrons or straws and plasticine to create 2 different prisms. Name them here and record how many vertices, edges and surfaces they have.**


FRIDAY

Space Vacation

Friday Mini Project

Space Tourism: Human space travel for recreational purposes.

This term you have been learning about SPACE and this project will broaden your knowledge and understanding even more. You will work to complete this project over 3 missions (3 weeks). Over this time, you will learn about the planets in our solar system and, based on your research, you will choose one to make the planet the **next best holiday destination.** You will create a holiday town on your planet and then work to design and make a vehicle for transportation. **You will need to apply your research skills partnered with your creativity to complete this project.**

Mission 1 (week 8)	SPACE: The future destination of holidays! The first mission **is the most important** and begins with you researching the planets of the solar system through a series of activities. Only once you know about the planets can you then decide which planet you want to turn into the next number 1 holiday destination. Once you've made an educated decision you will then focus on learning everything you can about your planet and tell me why you have chosen it. ***NOTE: To be prepared for Mission 2 you really need to know your chosen planet well. So use this time to learn as much as you can about it.***
Mission 2 (More detailed info in week 9)	HOLIDAY IN SPACE: Making the planet the next best holiday destination for tourists. It's time to create the holiday town on your chosen planet. You will need your deep knowledge and understanding of the features of your planet (from mission 1) to create a hotel and attractions that suit the climate and features of your planet.
Mission 3 (More detailed info in week 10)	SPACE VEHICLE DESIGN and MAKE: This task will see you choosing from the design and make choice board to design and make a space vehicle for use on your holiday planet.

* The above gives you a brief overview of the projects path. This week you are working on **Mission 1** only.

"You wake up one night in a sweat. The Covid-19 Pandemic has been here for nearly two years now and the World has changed so much! You miss school, your friend's, the freedom to do the things you love, and you miss HOLIDAYS to fun destinations even more!

Your mind starts wandering to the recent news where regular people took the first recreational flight into SPACE…. Then it hits you like a bolt of lightning. What if ***we*** *could travel to space for a holiday as a SPACE TOURIST? What planets could we see? Is it safe? Which planet would I choose if I could? Would it be Mars with its stunning red dust, canyons, rivers and volcanos, or would it be the Moon with its dry, dusty, rocky surface and deep craters to explore? You grab your torch and your iPad, pull your covers over your head, and begin to research the solar system.*

The next day you excitedly tell your parents. Your dad (a famous scientist) says he will help you make this dream come to life!"

Mission 1

SPACE: The future destination of holidays!

Today's mission is by far the most important! Without a true understanding of the planets, and your chosen planet, the next 2 missions (week 9 and 10) will be incredibly difficult.

Today you need to work through the planet tasks. Once you have learnt about the planets, you will choose one you think would be the most suitable to make into the worlds next best holiday destination.

Please complete the following tasks to conduct your research today. There is some information attached but you can also use reliable websites to gather more information if you can access the internet.

Task 1: Read the **Planet Data Chart** which gives you information about the planets in the Solar System. Then complete the two **Planet Data Chart Questions**.

Task 2: Using your knowledge from your research, complete the **Planets Book Project**. Here you will need to create a mini book that features the information on the assignment page. Follow the instructions on the document and use paper from home to create the book.

Task 3: Using the information in the **Info Pack of Planet information** and your **Planets Data Chart** choose two possible planets you like to compare in the **Planets Venn Diagram**. Here you will recognise similarities and differences.

Task 4: Now you have learnt about the planets you need to decide which planet you would like to start exploring for Space Tourism. This planet will be the one you focus on for the rest of the project so choose wisely. Complete this on **The Planetary Decision task** activity. If you can use the internet to make a photo collage of as many different pictures you can find of your chosen planet. Use reliable websites such as Britannica, NASA, National Geographic or the Observatory.

Task 5: Complete the **Planets Data Chart Crossword**. As an optional fun extra task.

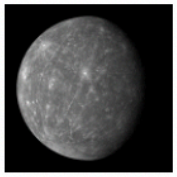
MILKY WAY PLANETS

MERCURY

Galaxy: Milky Way

Type: Terrestrial Inner Planet

Moons: NONE



Ring System: NONE

Discovered: Samarians (ancient times)

Day Length:
1 Day = 58 hrs, 16 mins.

Year Length:
1 Year = 88 Earth Days

High Temperature: 800° F
Low Temperature: -280° F

Gravity: less than Earth

Planet Size (diameter):
4,880 km

Distance from the sun:
58 million km

Data Collection by:
Mariner 10 (1974)
MESSENGER (2011)

Escape Velocity: 9,600 mph

Atmosphere:
hydrogen, helium, and sodium

Planet Characteristics:
Rocky surface, cliffs, and craters, grey color

Facts:
*water and ice may exist on the north pole
*the surface of Mercury is similar to Earth's moon with many craters
*planet has "wrinkles" from melted surface iron from the sun's heat called Lobate Scarps
*the fastest orbiting planet
*named after a god of Roman mythology
*has no tectonic plates

VENUS

Galaxy: Milky Way

Type: Terrestrial Inner Planet

Moons: NONE

Ring System: NONE

Discovered:
Ancient times

Day Length:
1 Day = 243 Earth Days

Year Length:
1 Year = 225 Earth Days

High Temperature:850° F
Low Temperature: None Recorded

Gravity: less than Earth

Planet Size (diameter):
12,104 km

Distance from the sun:
108 million km

Data Collection by:
Mariner 2 (1962)
Pioneer Venus (1978)
Magellan Probe (1989)

Escape Velocity: 23,300 mph

Atmosphere:
carbon dioxide

Planet Characteristics:
Thick cloud cover, hot, greenhouse effect, volcanoes, brownish color

Facts:
*one of two planet that rotates backwards (retrograde rotation) – East to West
*rain on Venus is made of sulfuric acid
*planet least likely to support life
*named after a god of Roman mythology
*has the Maat Mons a 5 mile high mountain
*has volcanoes and earthquakes
*called "Earth's Sister Planet"

EARTH

Galaxy: Milky Way

Type: Terrestrial Inner Planet

Moons: 1 (Luna)

Ring System: NONE

Discovered:
Ancient times

Day Length:
1 Day =24 Hours

Year Length:
1 Year = 365 Earth Days

High Temperature: 134° F
Low Temperature: -129° F

Gravity: neutral

Planet Size (diameter):
12,756km

Distance from the sun:
150 million km

Data Collection by:
Mir Space Station
International Space Station

Escape Velocity: 25,000 mph

Atmosphere:
nitrogen (78%), oxygen (21%)

Planet Characteristics:
Liquid water, life, green & blue color

Facts:
*the most dense planet
*planet sustains life mainly due to keeping a constant temperature for billions of years
*71% of the surface is liquid water
*unlike other planets, the crust on Earth is divided into many tectonic plates
*named after a god of Roman mythology
*has volcanoes and earthquakes

MARS

Galaxy: Milky Way

Type: Terrestrial Inner Planet

Moons: 2 (Phobos and Deimos)

Ring System: NONE

Discovered: Romans (ancient times)

Day Length:
1 Day = 24.5 Hours

Year Length:
1 Year = 686 Earth Days

High Temperature: 98° F
Low Temperature: -193° F

Gravity: less than Earth

Planet Size (diameter):
6,794 km

Distance from the sun:
228 million km

Data Collection by:
Mariner 4 (1965)
Mars Pathfinder (1997)
Phoenix (2008)

Escape Velocity: 11,200 mph

Atmosphere:
carbon dioxide, nitrogen, oxygen, water vapor

Planet Characteristics:
Polar icecaps, pink sky, rust-colored ground, volcanoes, reddish color

Facts:
*the month of March is named after Mars
*home of the Olympus Mons, the largest mountain (extinct volcano) in the Milky Way
*named after a god of Roman mythology
*frozen water may exist underground
*its two moons are not perfectly round but similar to asteroid rocks
*orbits next to the asteroid belt

JUPITER

Galaxy: Milky Way

Type: Gas Giant Outer Planet

Moons: 67
(major: Io, Europa, Ganymede, Callisto)

Ring System: 4 major rings

Discovered: Romans
(Ancient times)

Day Length:
1 Day = 10 Hours

Year Length:
1 Year = 4,329 Earth Days

High Temperature: -244° F
Low Temperature: None Recorded

Gravity: stronger than Earth

Planet Size (diameter):
142,984 km

Distance from the sun:
778 million km

Data Collection by:
Pioneer 10 (1973)
Voyager 1 (1977)
Galileo (2003)

Escape Velocity: 133,100 mph

Atmosphere:
hydrogen, helium, methane, ammonia

Planet Characteristics:
rocky planet core, large cyclone storms, brown and yellow color (red spot)

Facts:
*thin ring system
*largest storm in the Milky Way occurred on Jupiter (The Great Red Spot)
*named after a god of Roman mythology
*has 50 major moons, and 12 smaller…unconfirmed moons
*orbits next to the asteroid belt

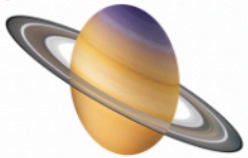
SATURN

Galaxy: Milky Way

Type: Gas Giant Outer Planet

Moons: 62
(major: Titan, Rhea, Pan, Enceladus)

Ring System: 30 major rings



Discovered: Romans
(Ancient times)

Day Length:
1 Day = 10.5 Hours

Year Length:
1 Year = 10,752 Earth Days

High Temperature: -300° F
Low Temperature: None Recorded

Gravity: less than Earth

Planet Size (diameter):
120,000 km

Distance from the sun:
1,427 million km

Data Collection by:
Pioneer 11 (1979)
Voyager 1 (1980)
Cassini-Huygens (2004)

Escape Velocity: 79,400 mph

Atmosphere:
hydrogen, helium, methane, ammonia

Planet Characteristics:
rocky planet core, windy with large storms, brown and yellow color (colorful rings)

Facts:
*many ring systems discovered in 1659
*the least dense of all planets
*named after a god of Roman mythology
*53 major moons, possibly more to discover
*surface is liquid
*fastest wind storms in the galaxy (1,100mph)

URANUS

Galaxy: Milky Way

Type: Gas Giant Outer Planet

Moons: 27
(major: Miranda, Titania, Oberon)

Ring System: 13 major ring

Discovered:
William Herschel, 1781

Day Length:
1 Day = 16.8 Hours

Year Length:
1 Year = 30,663 Earth Days

High Temperature: -300° F
Low Temperature: None Recorded

Gravity: less than Earth

Planet Size (diameter):
50,800 km

Distance from the sun:
2,869 million km

Data Collection by:
Voyager 2 (1986)

Escape Velocity: 47,600 mph

Atmosphere:
hydrogen, helium, methane

Planet Characteristics:
Planet turns on its side, rocky, ice, windy with fast moving clouds, green color

Facts:
*one of two planet that rotates backwards
*9 narrow ring system (vertical)
*oceans of superheated liquid on surface
*named after a god of Roman mythology
*may have a liquid surface
*cloudy atmosphere
*21 major moons
*"sister" planet to Neptune

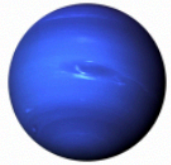
NEPTUNE

Galaxy: Milky Way

Type: Gas Giant Outer Planet

Moons: 14 (major: Triton, Nereid)

Ring System: 4 major rings



Discovered:
Johan Galle (1846)

Day Length:
1 Day = 16 Hours

Year Length:
1 Year = 60,225 Earth Days

High Temperature: -370° F
Low Temperature: None Recorded

Gravity: stronger than Earth

Planet Size (diameter):
49,532 km

Distance from the sun:
4,486 million km

Data Collection by:
Voyager 2 (1989)
Hubble Telescope (1994)

Escape Velocity: 52,600 mph

Atmosphere:
hydrogen, helium, methane

Planet Characteristics:
Rocky planet core, surface is slush liquid, frozen methane, blue color

Facts:
*5 total rings (4 major, 1 minor)
*Great Dark Spot, believed to be a storm
*fast wind storms
*named after a god of Roman mythology
*may have a liquid surface
*cloudy atmosphere
*methane ice gives planet a blue color
*"sister" planet to Uranus

PLUTO

Galaxy: Milky Way

Type: Dwarf Planet

Moons: 5 (Charon, Hydra, Nix)

Ring System: NONE

Discovered:
Clyde Tombaugh (1930)

Day Length:
1 Day = 153.5 Hours

Year Length:
1 Year = 90,520 Earth Days

High Temperature: -400° F
Low Temperature: None Recorded

Gravity: less than Earth

Planet Size (diameter):
2,274 km

Distance from the sun:
5,890 million km

Data Collection by:
Hubble Telescope (2005)
New Horizons (2015)

Escape Velocity: 9,600 mph

Atmosphere:
methane, carbon monoxide

Planet Characteristics:
Cold temperatures, rocky planet surface, ice, grey color

Facts:
*the smallest planet in the Milky Way
*changes orbits with Neptune every 20+ years
*the least studied planet
*named after a god of Roman mythology
*has 1 major moon Charon…almost the same size as Pluto
*reclassified as a dwarf planet in 2006

Planets Data Questions

DIRECTIONS: USE YOUR PLANET DATA CHART TO ANSWER THE QUESTIONS.

1) Of all planets on the chart, which three planets have the longest day (rotation)?

1 - _____ 2 - _____ 3 - _____

2) Of all planets on the chart, which three planets have the longest year (revolution)?

1 - _____ 2 - _____ 3 - _____

3) Rank the four inner planets based on their planet size from largest to smallest.

1 - _____ 3 - _____

2 - _____ 4 - _____

4) Rank the four outer planets based on their planet size from largest to smallest.

1 - _____ 3 - _____

2 - _____ 4 - _____

5) How many planets have hydrogen as a measurable gas in their atmosphere? Which ones?

_____

6) Based on high temperature, what are the four hottest planets in the Milky Way Galaxy? (1 = hottest)

1 - _____ 3 - _____

2 - _____ 4 - _____

7) NASA's Mariner spacecraft program of the 1960s and 1970s studied many planets. Which ones and in what year?

_____

8) NASA's Voyager spacecraft program of the 1970s and beyond studied many planets. Which ones and in what year?

_____

9) A scientist describes a planet as having, "polar ice caps and a pink sky." What planet is being described?

_____

10) A scientist describes a planet as having, "a brown-yellow color with large storms." What planet is being described?

_____

11) Moons are satellites that orbit planets. Rank the planets in order (most to least) by how many moons they have?

1 - _____ 4 - _____ 7 - _____

2 - _____ 5 - _____ 8 - _____

3 - _____ 6 - _____ 9 - _____

12) Which two planets have gravity stronger than Earth? _____

13) Choose one of the terrestrial inner planets and explain four facts about that planet.

Planet - _____

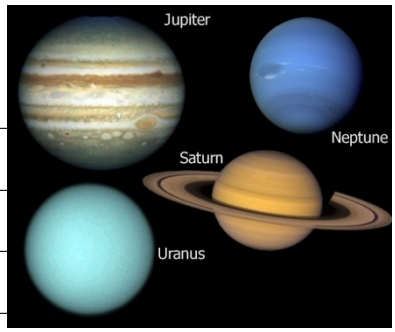
1 - _____

2 - _____

3 - _____

4 - _____

14) Choose one of the gas giant outer planets and explain four facts about that planet.



Planet - _____

1 - _____

2 - _____

3 - _____

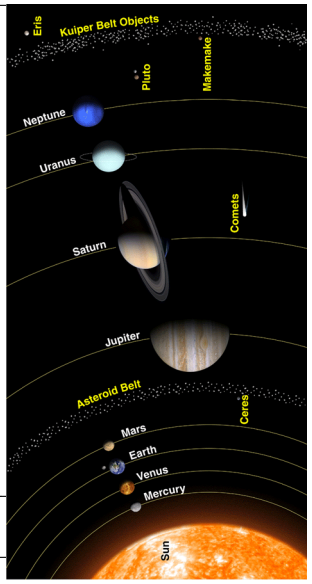
4 - _____

15) Describe three main characteristics of the planet Jupiter. _____

_____

16) Describe three main characteristics of the planet Venus. _____

_____



17) What are two things that the planets Mercury and Venus have in common (comparison)?

1 - _____

2 - _____

18) What are two things the planets Uranus and Neptune have that make them different (contrast)?

1 - _____

2 - _____

19) Choose two planets. Explain two similarities and two differences of these two planets.

Planet 1 - _____ Planet 2 - _____

Similarities - _____

_____

Differences - _____

_____

20) On our chart which three planets were discovered by known scientists? In what years?

_____

Planets Data Questions 2

DIRECTIONS: USE YOUR PLANET DATA CHART TO ANSWER THE QUESTIONS.

1) Of all planets on the chart, which three planets have the shortest day (rotation)?

1 - _____ 2 - _____ 3 - _____

2) Of all planets on the chart, which three planets have the shortest year (revolution)?

1 - _____ 2 - _____ 3 - _____

3) Rank the planets on the data chart based on their planet size from smallest to largest.

1 - _____ 4 - _____ 7 - _____

2 - _____ 5 - _____ 8 - _____

3 - _____ 6 - _____ 9 - _____

4) NASA needs to understand escape velocities of planets in order to determine how fast a spacecraft must travel to escape the force of gravity on a planet. Which six planets have the strongest gravity based on their escape velocity?

1 - _____ 3 - _____ 5 - _____

2 - _____ 4 - _____ 6 - _____

5) Describe three main characteristics of the planet Mars. _____

_____

6) Describe three main characteristics of the planet Neptune. _____

_____

7) Create a timeline that shows the first six data probes that studied planets in the galaxy from those listed on our chart.

1 - _____ Year - _____

2 - _____ Year - _____

3 - _____ Year - _____

4 - _____ Year - _____

5 - _____ Year - _____

6 - _____ Year - _____

8) What are two things that Earth and Mars have in common? (comparison)

1 - _____

2 - _____

9) Which planets have ring systems? _____

10) Besides ring systems, what is one other fact that all four outer planets have in common? _____

_____

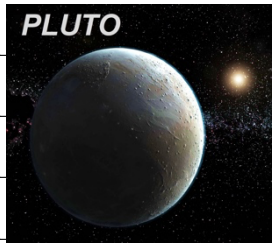
_____

11) Based on low temperature, what are the four coldest planets in the Milky Way Galaxy? (1 = coldest)

1 - _____ 3 - _____

2 - _____ 4 - _____

12) You have been assigned to do a report on Pluto. What do you think are the four most important facts to include?



1 - _____

2 - _____

3 - _____

4 - _____

13) What is Ganymede? _____

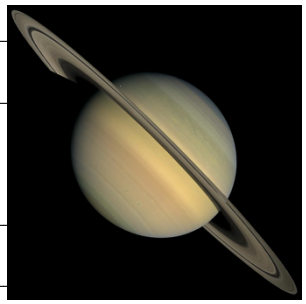
14) What is the Great Dark Spot? _____

15) What planets contain methane in their atmosphere? _____

16) Based on the high and low temperatures provided, what is the average temperature on the following planets?

Mercury = _____ Earth = _____

17) A spacecraft lands on Saturn. What should NASA scientists expect to see on the planet based on the data chart?



_____

_____

18) What are two things that Jupiter and Saturn have that make them different? (contrast)

1 - _____

2 - _____

19) Choose one inner planet and one outer planet. Explain two similarities and two differences of these two planets.

Inner Planet - _____ Outer Planet - _____

Similarities - _____

_____

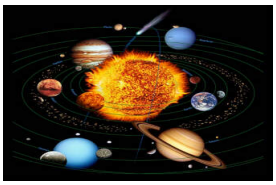
Differences - _____

_____

20) Which planets were discovered and named by the Romans? _____

21) What is one science fact about a planet that you would like to learn? Which planet? _____

_____



Planets Book Project

DIRECTIONS: CREATE A **7-PAGE BOOK** ON 5 PLANETS OF THE MILKY WAY.
BE SURE EACH PAGE IS FINISHED CORRECTLY AND INCLUDES THE INFORMATION SET OUT BY PAGE BELOW.
USE THE PLANET DATA CHART TO FIND THE CORRECT INFORMATION (*SPELLING & ACCURACY COUNT).*

PAGE 1

-TITLE: **5 PLANETS OF THE MILKY WAY**
-YOUR NAME, CLASS
-1 PICTURE OF ALL THE PLANETS IN THE MILKY WAY

PAGE 2

-PLANET #1 : (YOUR CHOICE)

-TYPE - NUMBER OF MOONS
- DAY LENGTH -YEAR LENGTH
-1 PICTURE OF THE PLANET

-2 FACTS ABOUT THE PLANET (COMPLETE SENTENCES)
-1 PICTURE OF THE PLANET

PAGE 3

-PLANET #2 : (YOUR CHOICE)

-TYPE - NUMBER OF MOONS
- DAY LENGTH -YEAR LENGTH
-1 PICTURE OF THE PLANET

-2 FACTS ABOUT THE PLANET (COMPLETE SENTENCES)
-1 PICTURE OF THE PLANET

PAGE 4

-PLANET #3 : (YOUR CHOICE)

-TYPE - NUMBER OF MOONS
- DAY LENGTH -YEAR LENGTH
-1 PICTURE OF THE PLANET

-2 FACTS ABOUT THE PLANET (COMPLETE SENTENCES)
-1 PICTURE OF THE PLANET

PAGE 5

--PLANET #4 : (YOUR CHOICE)

-TYPE - NUMBER OF MOONS
- DAY LENGTH -YEAR LENGTH
-1 PICTURE OF THE PLANET

-2 FACTS ABOUT THE PLANET (COMPLETE SENTENCES)
-1 PICTURE OF THE PLANET

PAGE 6

--PLANET #5 : (YOUR CHOICE)

-TYPE - NUMBER OF MOONS
- DAY LENGTH -YEAR LENGTH
-1 PICTURE OF THE PLANET

-2 FACTS ABOUT THE PLANET (COMPLETE SENTENCES)
-1 PICTURE OF THE PLANET

PAGE 7

- PLANET SPACE PROBES

-4 PICTURES OF NASA SPACE PROBES THAT HAVE STUDIED YOUR PLANETS. UNDER EACH PICTURE THE NAME OF THE PROBE, YEAR IT STUDIED A PLANET AND NAME OF THE PLANET BEING STUDIED.

PLANET INFO PACK

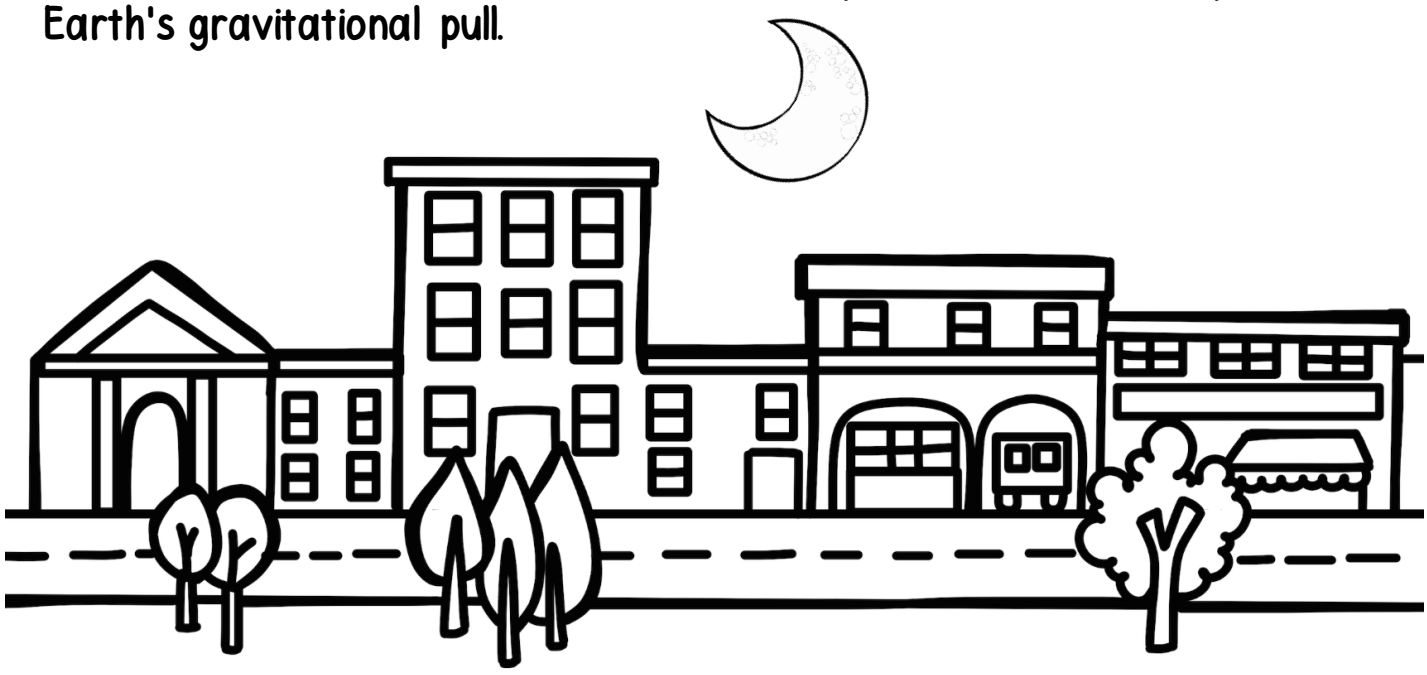
The Moon

Sometimes when we look up at the Moon, it looks like there is a face staring back at us. That's because the surface of the Moon is covered with craters, or indentations, from falling asteroids and comets.

The Moon is 238,857 miles away from Earth. Although the Moon seems to be very bright, it doesn't make any light of its own. The light we see is actually the light from the Sun reflecting off of the Moon. The Moon is more than 4 ½ billion years old. The Moon is very hot during the day and very cold at night.

The Moon is a huge igneous rock! Its core is made up of iron and sulfur. The Moon plays an important part in life on Earth. It controls the currents, or tides, of the oceans. The Moon's gravity is only about 17% compared to the Earth so you would be very light there. You could easily jump several feet into the air, almost like jumping on a trampoline. There is no atmosphere on the Moon to trap sound, so it's absolutely silent there!

How did the Moon come to be? There are many theories suggesting that the Moon used to be a part of the Earth and broke off from it. Some scientists believe that it was just floating by and got trapped by the Earth's gravitational pull.



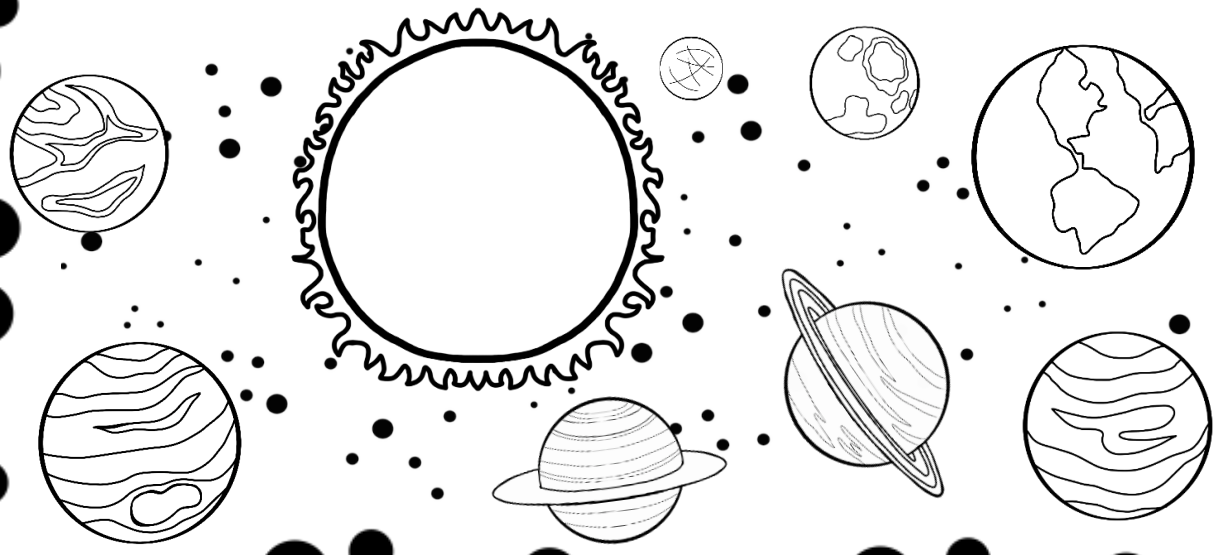
The Solar System

A solar system is like a community where the planets, Moon, and stars all live together. Our solar system is made up of the Sun and everything that orbits around it including planets, dwarf planets, moons, asteroids, meteoroids, and comets. In our solar system there are eight planets: Earth, Jupiter, Mars, Mercury, Neptune, Saturn, Uranus, and Venus.

Scientists believe that our solar system started out as a huge cloud of gas and dust about 5 billion years ago. For millions of years, gravity pulled the bits of this giant dust cloud tighter and tighter together. Gravity and pressure caused several nuclear reactions and explosions, creating the Sun. The other planets that make up our solar system were formed during these explosions too.

The Sun is in the center of our solar system. The Sun is a star that all the other planets orbit around. The Sun's gravity is very powerful and tries to pull the planets toward it. The four inner planets are called terrestrial planets because they are rocky, warm, and have craters. The four outer planets are called gas giants because they are made up mostly of gases like hydrogen and helium.

What is a solar system?



Mercury

Mercury is the closest planet to the Sun. Mercury is one of the planets that can be seen without a telescope. Because it's close to the Sun, most people can see it at dawn and dusk right before the Sun rises and sets. It only takes 88 Earth days for Mercury to fully orbit the Sun. However, Mercury rotates very slowly, taking more than 58 days to do a single rotation on its axis. That means the days and nights are very long on Mercury.

Since it's close to the Sun, it has one very hot side and one very cold side. Although it's the smallest planet in our solar system, it has a huge range in temperatures from -180 degrees Celsius on the dark side to over 400 degrees Celsius on the sunny side. Mercury's surface is covered in craters, or indentions, from falling asteroids. Its iron core gives it a magnetic field just like Earth.

Mercury's orbit is unique because it rotates from being very close to the Sun to being very far away. Mercury is a little bit bigger than size of the Earth's Moon. Satellite pictures have shown that Mercury looks a lot like our Moon.

Why can you see Mercury before the Sun rises or after the Sun sets?

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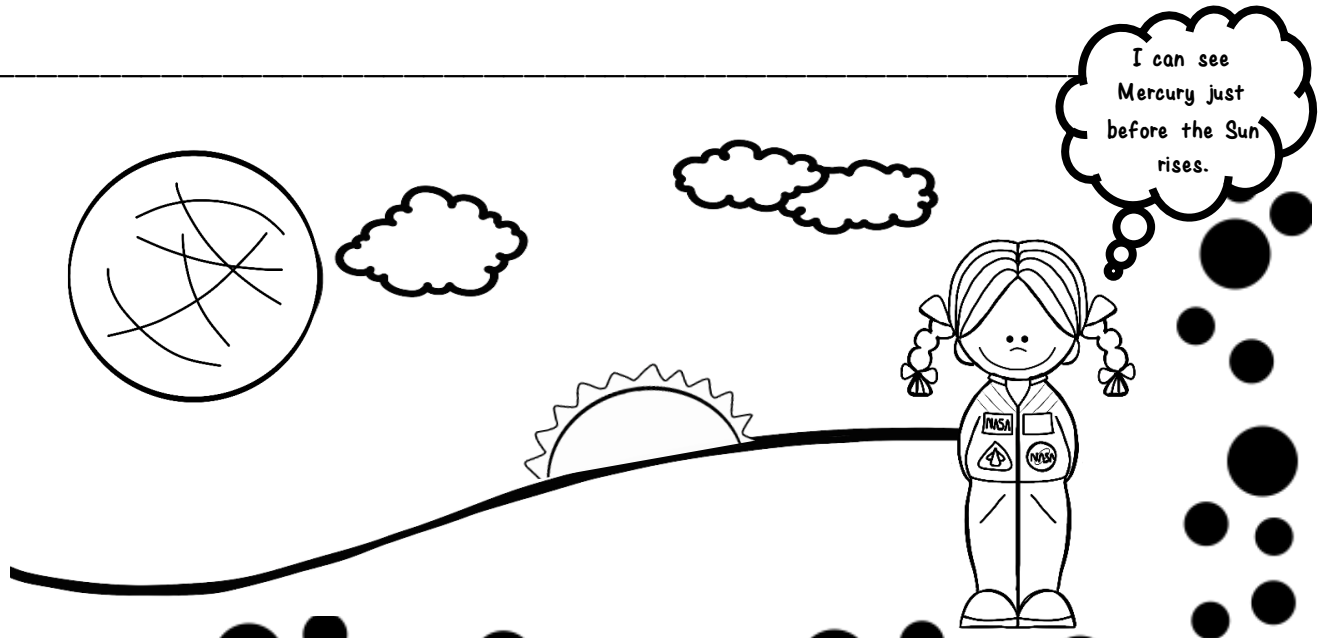

Venus

Venus is the second planet from the Sun, right in between Mercury and Earth. Venus orbits the Sun in 225 Earth days, which is much faster than here on Earth. Venus is the brightest object in the sky, other than the Sun and Moon. Only Venus and Uranus rotate in a counterclockwise direction, which is different from all the other planets. Scientists think it might have hit an asteroid or other object, changing the direction of its path.

Venus is similar to the Earth in many ways. It's almost the same size as Earth and often called, "Earth's Sister Planet." Gravity on Venus is just a little less than on Earth. Venus also has a center iron core, like Earth, but it doesn't have a magnetic field. Venus rotates on its axis very slowly. In fact, one day on Venus equals about 243 Earth days.

Venus is the hottest planet in our solar system. Its dense atmosphere is made up mostly of carbon dioxide which traps the heat on the surface. This creates a greenhouse effect. The average temperature on Venus is more than 400 degrees Celsius.

Why is Venus the hottest planet in our solar system?

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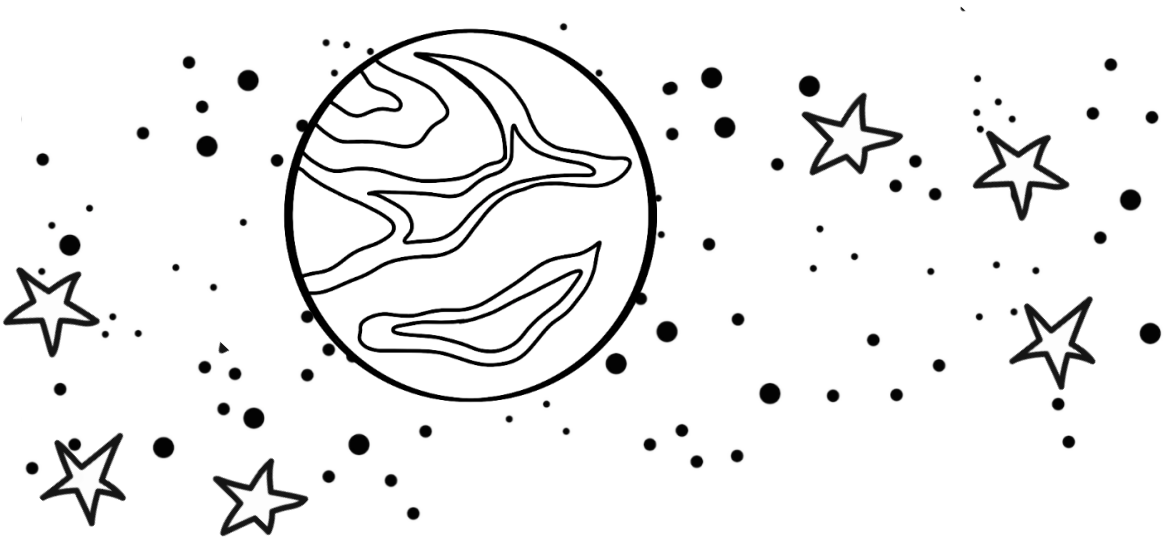

Earth

Earth is the third planet from the Sun. The Earth is 93 million miles away from the Sun. More than 75% of the Earth is made up of water and 1/10 of that is ice. Earth is called, "The Blue Planet" because from space all the oceans make it look blue. The Earth's atmosphere is 21% oxygen and the only planet that we know of that humans can live on. The Earth provides the perfect condition for humans, plants, and animals to exist.

The Earth takes 24 hours to rotate on its axis. The spinning of the Earth causes day to turn to night. The side of the Earth that faces the Sun has daytime while the side of the Earth that is turned away from the Sun has nighttime. That means that when it's daytime in the United States, it's nighttime on the opposite side of the Earth in China.

It takes 365 and ¼ days for the Earth to orbit the Sun. The extra ¼ is added on as an extra day in February, once every four years, called a leap year. The rotation of the Earth around the Sun once a year causes the changing of the seasons.

The inside of the Earth is active. Earthquakes, volcanoes, and mountain building takes place because of the shifting of the tectonic plates. The Earth is different from all the other planets in our solar system because it has intelligent beings that live on it.

What makes the Earth unique from all the other planets?

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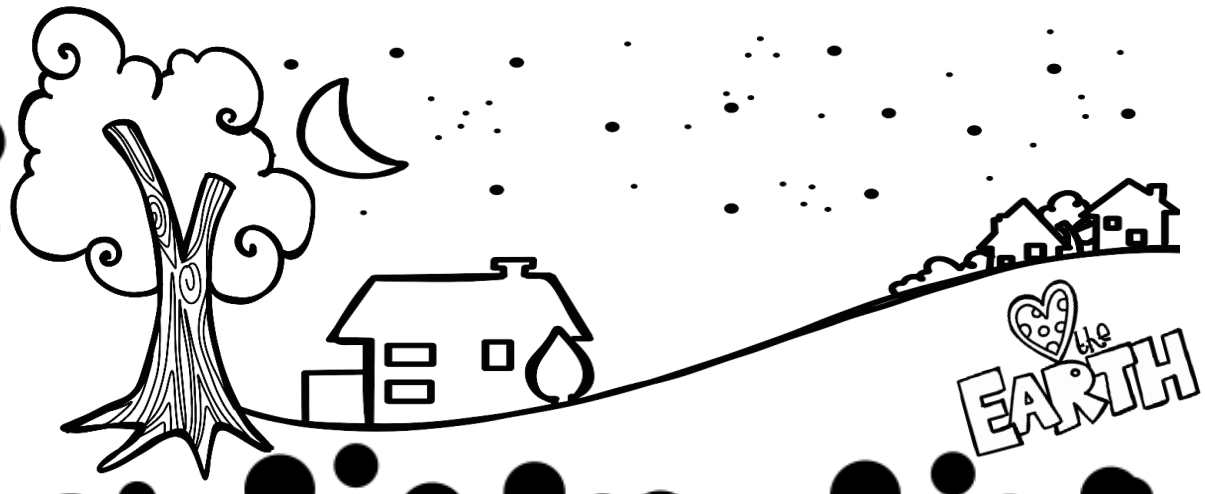

Mars

Have you seen Mars before? Sometimes you can see it without a telescope. Mars looks like a red dot and that's why it's called, "The Red Planet." Mars is the fourth planet from the Sun. Mars rotates on its axis in 24 ½ hours. It is a terrestrial planet, meaning it's made up of rocks and minerals. Mars has many landforms, including mountains, canyons, and valleys, just like we do here on Earth. In fact, the tallest mountain in the solar system is on Mars. Mars is tilted much like Earth so it has four different seasons but it takes almost twice as long, 687 Earth days, to orbit the Sun.

There are terrible dust storms on Mars that sometimes cover the whole planet and constantly change its surface. Mars has a thin atmosphere so it isn't able to absorb the Sun's heat, making it very cold there. The average temperature is -81 degrees Fahrenheit. Mars has two tiny moons that orbit it.

In the 1990s, scientists sent remote-controlled robots, called rovers, to Mars to investigate the surface. Water was discovered on Mars but since it's so cold there, it's in the form of ice. No evidence was found that life exists on Mars but some scientists think that many years ago Mars used to be more like Earth with flowing oceans and rivers.

Why is it so cold on Mars?

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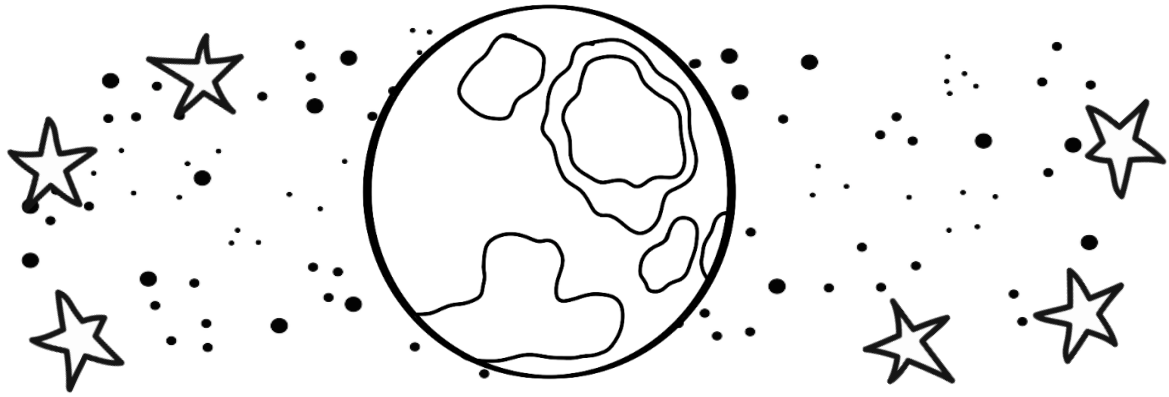

Jupiter

Jupiter is the fifth from the Sun. Because it's so far away from the Sun, it's very cold there! Jupiter is the largest planet in the solar system with 64 Moons that orbit it. Jupiter's gravity is so strong that you would weigh twice as much there as you do on Earth. It takes Jupiter 4,332 Earth days, or almost 12 years, to orbit the Sun!

Jupiter spins very quickly, taking only 10 hours to rotate once on its axis. This fast spinning makes Jupiter have violent storms that can change its appearance quickly. Jupiter has a permanent storm called, "The Great Red Spot." This storm spot is more than five times the size of Earth.

Jupiter is the largest of the "gas giants". Other gas giants include Saturn, Uranus, and Neptune. Jupiter is made up mostly of gases like hydrogen, helium, ammonia, and methane. These gases form colorful clouds that surround it. Jupiter gives off more energy than it receives from the Sun because of its massive magnetic field.

On August 5, 2011, NASA sent a solar-powered spacecraft, called Juno, on a mission to learn more about Jupiter. Juno is carrying a color camera to give the public a close-up look at Jupiter. It will take Juno about five years for it to reach Jupiter.

Why do you think Jupiter is called a "gas giant"?

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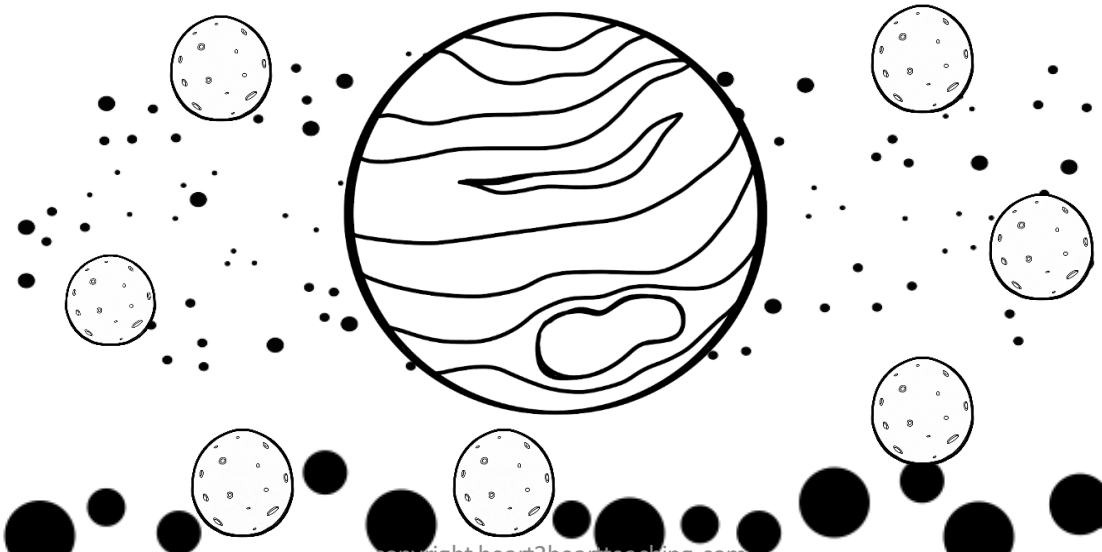

Saturn

Saturn is the sixth planet from the Sun. Saturn is sometimes called, "The Jewel of the Solar System" because of its beautiful rings. It's best known for its colorful rings that were discovered in 1610 by Galileo.

Saturn is gigantic, 100 times bigger than the Earth, with more than 50 moons orbiting it. Saturn has 30 sets of rings around it made up of billions of tiny chunks of ice, dust, and rocks. Its moons are important in keeping the rings in place.

Saturn has the second shortest day, after Jupiter, in our solar system. Saturn turns on its axis once every 10 ½ hours. However, it takes a long time, 29 ½ Earth years, for it to orbit the Sun completely.

Similar to Jupiter, Saturn is a gas giant. Its atmosphere is made up mostly of hydrogen. Did you know you can actually see Saturn with binoculars or a small telescope? That's because it's the fifth brightest object in the solar system.

Tell 3 ways that Jupiter and Saturn alike:

_____

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Uranus

Uranus is seventh in line from the Sun. Uranus is the third largest planet in our solar system. Uranus is sometimes called, "The Ice Giant" because it's the coldest planet in our solar system. Temperatures can drop down to -224 degrees Celsius. Just like Jupiter and Saturn, Uranus is a gas giant. Uranus is full of large amounts of methane gas which give it a blue color.

Uranus has a set of small rings and over 25 moons in its orbit. Uranus often looks like it's tipped over on its side because of the way it's tilted. Scientists think a massive object must have collided with Uranus, almost knocking the planet over on its side.

Uranus rotates on its axis once every 17 hours. Like Venus, it turns in a counterclockwise direction, different from all the other planets in our solar system. It takes 84 Earth years for Uranus to circle the Sun one time! Uranus's tilt allows only one side of the planet to have daylight for 42 years while the other side has complete darkness for 42 years.

Why is Uranus the coldest planet in our solar system?

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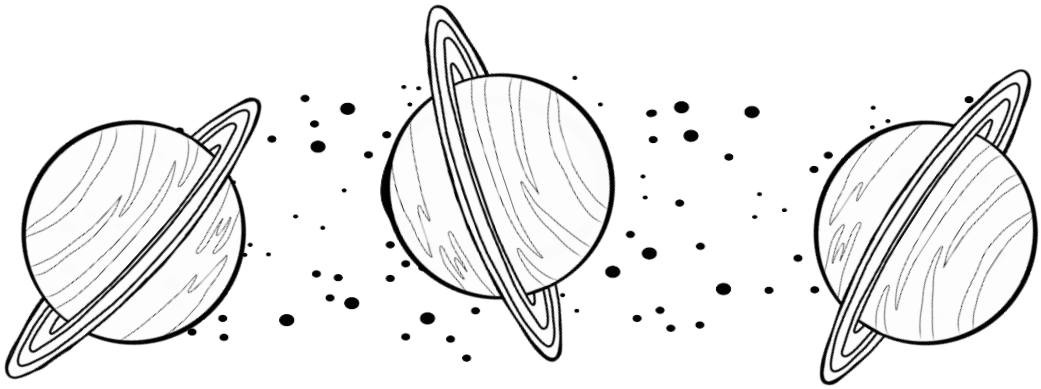

Neptune

Neptune wasn't discovered until 1846! After the discovery of Uranus, astronomers noticed that the planet was being pull out of its normal orbit so they figured out that the gravity from another planet beyond Uranus must be the cause. Using math, scientists were able to figure out exactly where Neptune was located in the solar system.

Neptune is the planet that is the farthest from the Sun so it is extremely cold there. Neptune is the smallest of the gas giants with 14 moons orbiting it. However, it's still 4 times larger than the size of Earth.

Neptune spins on its axis very rapidly, taking only 16 hours to make one rotation, or one Earth day. Like all the other planets in the solar system, Neptune moves in an orbit around the Sun. It takes Neptune 165 Earth years to orbit the Sun!

Neptune's rocky core is surrounded by layers of hydrogen, helium, and methane. Neptune is covered in thin white clouds that surround the planet.

Neptune has the most powerful storms in the solar system with freezing winds ten times stronger than any hurricane on Earth. Neptune has a dark blue storm spot similar to the Great Red Spot on Jupiter that is constantly changing its surface.

Why do you think Neptune wasn't discovered earlier?

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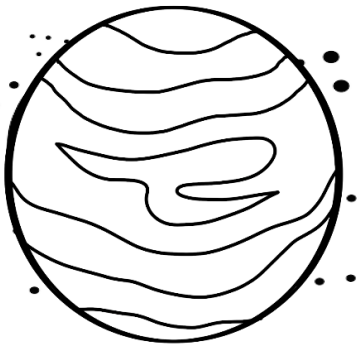
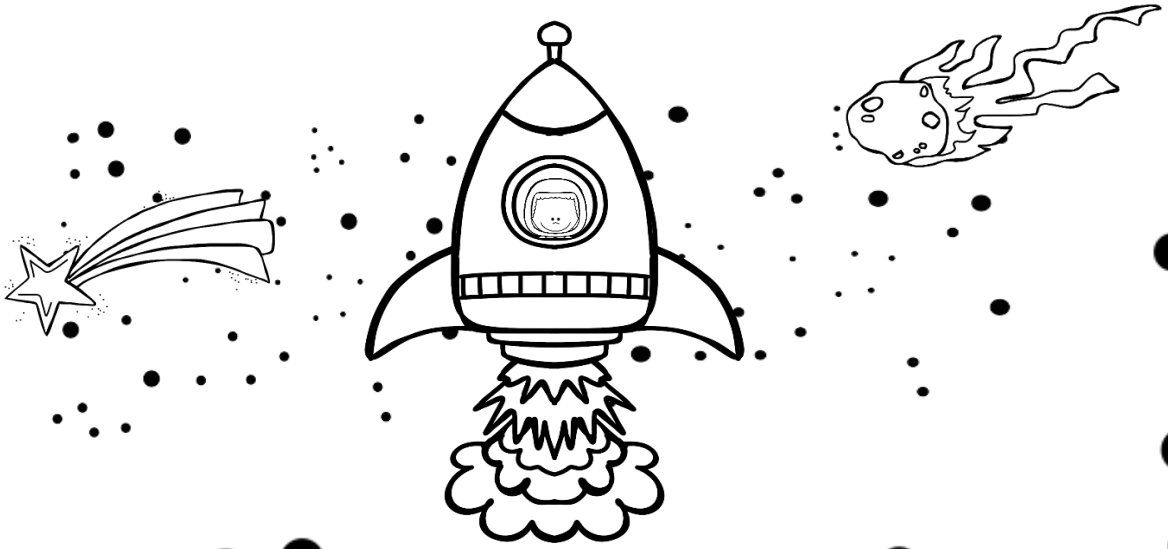


Pluto and Everything Else

There is more than just the Sun and eight planets in our solar system. There are tons of asteroids, or pieces of rocks, in all shapes and sizes, that are floating around in space. Most of the asteroids are found in the asteroid belt in between Mars and Jupiter.

Comets are small pieces of ice and dust that when passing close to the Sun, heat up and begin to melt, leaving behind brilliant tails. When a comet begins to shine, they seem to light up our sky!

Pluto was once considered a planet, but in 2006, scientists agreed that it's really a dwarf, or tiny planet, much smaller than our Moon. They discovered that it was really just a very small, rocky mass. Pluto is in an elliptical orbit, or oval-shaped path, that at times brings it very close to the Sun and other times takes it very far away from the Sun. Pluto has four Moons named Charon, Hydra, Nix, and P4. Pluto isn't the only dwarf planet, there's Ceres and Eris too.

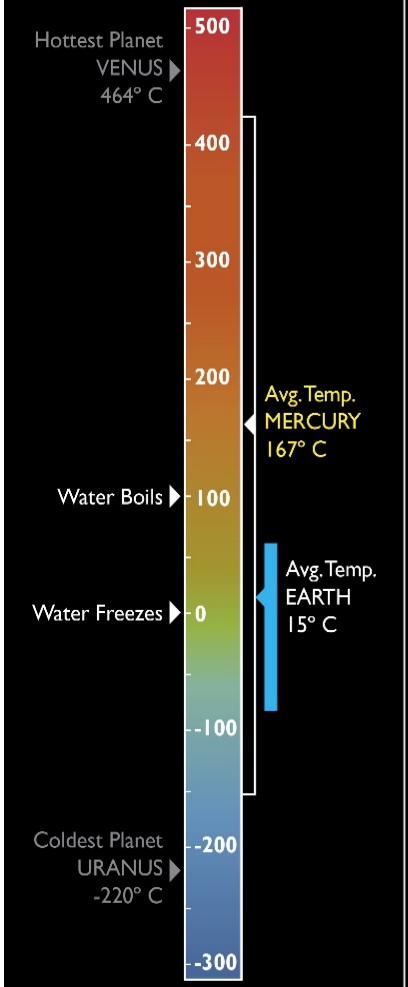


Mercury

DISTANCE FROM THE SUN 36,000,000 mi 0.39 au

SUN — MERCURY — VENUS — EARTH — MARS — JUPITER — SATURN — URANUS — NEPTUNE

TEMPERATURE
Celsius

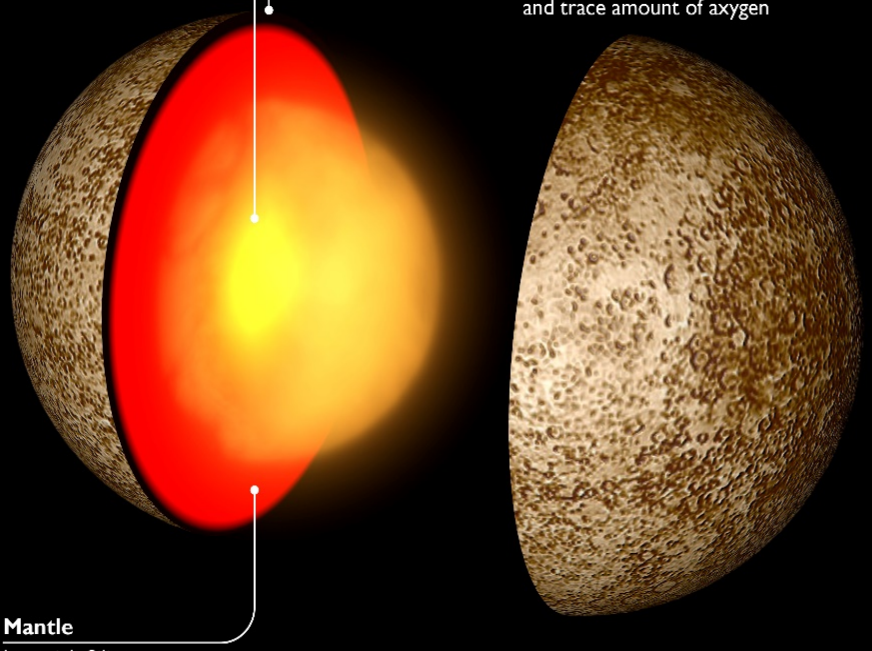


COMPOSITION & ATMOSPHERE

Crust
Iron-poor Silicates

Liquid core
Iron-Nickel

Mantle
Iron-rich Silicates



Extremely thin

Mercury is too small and hot to keep any atmosphere. There are some particles of helium and hydrogen delivered by the Sun's solar winds and trace amount of axygen

SIZE & SCALE

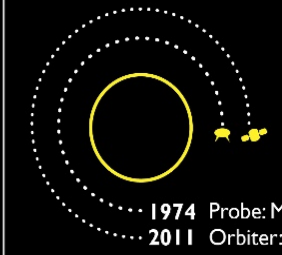
Mass
0.055 Earths

Diameter
3,032 mi
4,879 km

ORBIT

1 planet day	176 Earth days
1 planet years	0.241 Earth years

EXPLORATION



1974 Probe: Mariner 10
2011 Orbiter: Messenger

MOONS

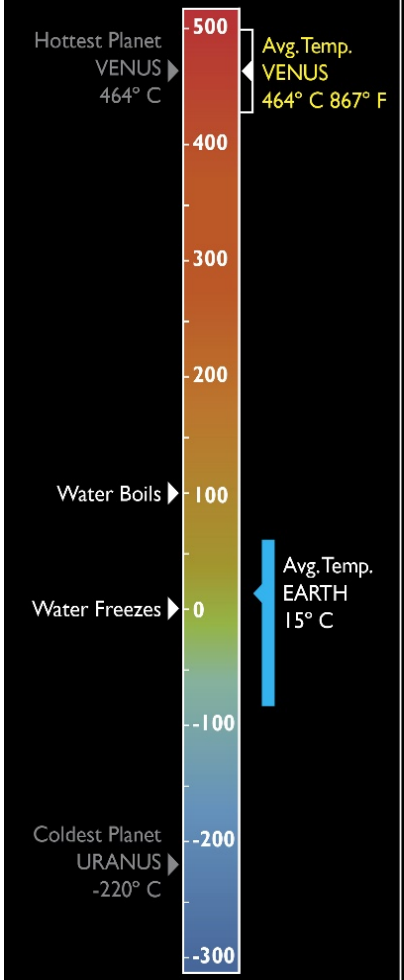
0 Mercury has no known moons

Venus

DISTANCE FROM THE SUN 67,108,000 mi 0.72 au

SUN — MERCURY — **VENUS** — EARTH — MARS — JUPITER — SATURN — URANUS — NEPTUNE

TEMPERATURE
Celsius

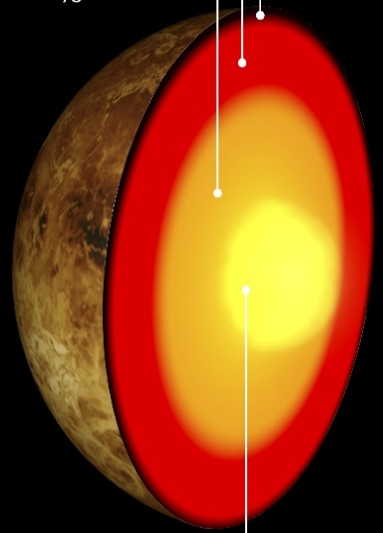


COMPOSITION & ATMOSPHERE

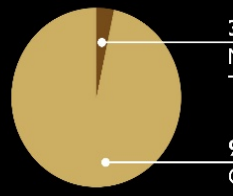
Crust
Iron-poor Silicates

Mantle
Iron-rich Silicates

Liquid Outer Core
Nickel, Iron, Sulfur and Oxygen



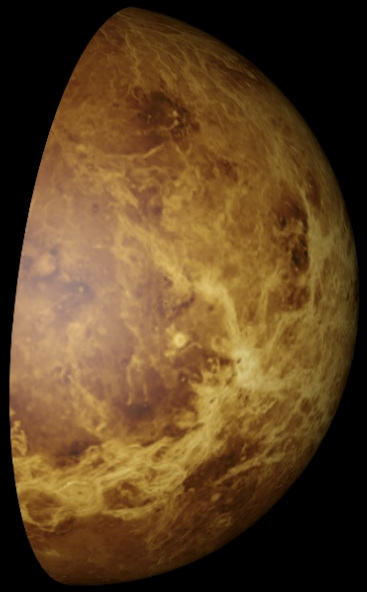
Solid Inner Core
Nickel, Iron



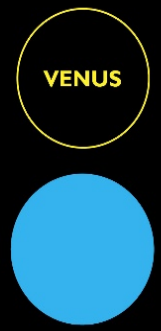
3,5%
Nitrogen plus Trace gases

96,5%
Carbon Dioxide

Thick
With the thickest atmosphere of all the inner planets, Venus's atmospheric pressure is 92 times that of Earth. Its thick clouds of sulfur dioxide and sulfuric acid droplets obscure Venus's surface from view



SIZE & SCALE



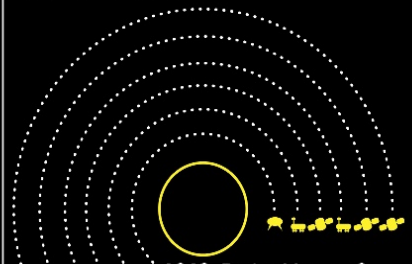
Mass
0.815 Earths

Diameter
7,521 mi
12,104 km

ORBIT

1 planet day	117 Earth days
1 planet years	0.615 Earth years

EXPLORATION



1962 Probe: Mariner 2
1970 Lander: Venera 7
1978 Orbiter: Pioneer Venus Orbiter
1982 Lander: Venera 14
1989 Orbiter: Magellan/Venus Radar Mapper
2006 Orbiter: Venus Express

MOONS

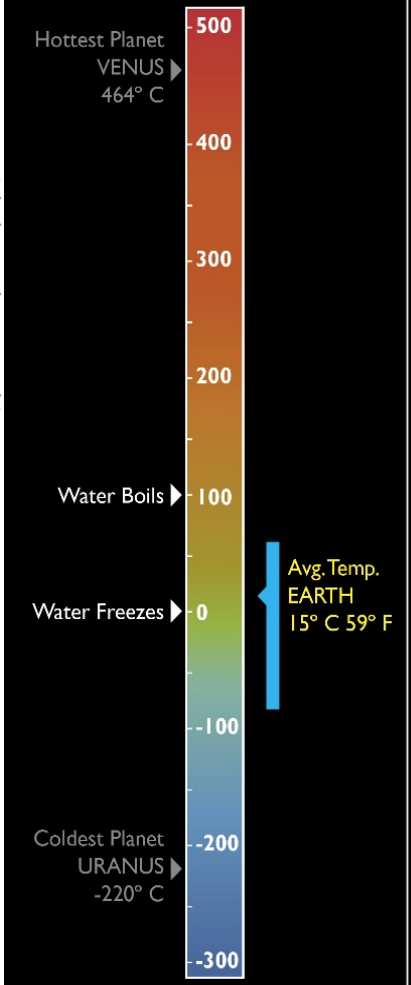
0
Venus has no known moons

Earth

DISTANCE FROM THE SUN 93,000,000 mi 1.00 au

SUN — MERCURY — VENUS — **EARTH** — MARS — JUPITER — SATURN — URANUS — NEPTUNE

TEMPERATURE
Celsius



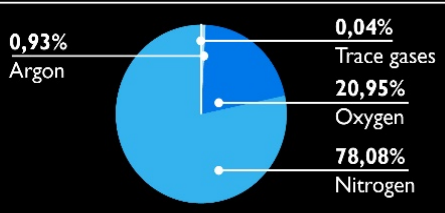
COMPOSITION & ATMOSPHERE

Crust
Iron-poor Silicates

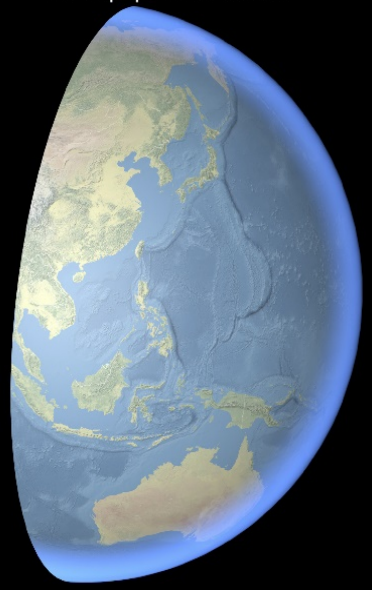
Mantle
Iron-rich Silicates

Liquid Outer Core
Nickel, Iron, Sulfur and Oxygen

Solid Inner Core
Nickel, Iron



Thick
Essentially all of the oxygen in Earth's atmosphere was produced by plant life. One form of oxygen, ozone, exists in a broad layer high in the atmosphere, where it absorbs harmful ultraviolet radiation from the Sun and helps protect life below



SIZE & SCALE

Mass
1 Earth mass 1.31708565 x 10^{25} pounds

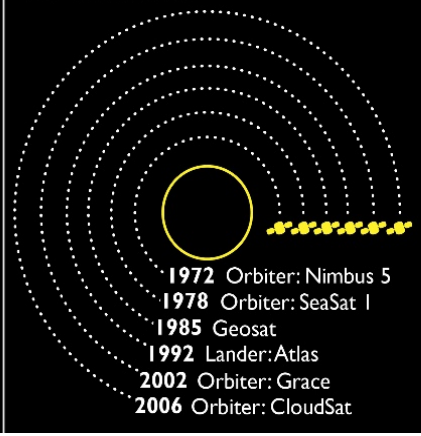
EARTH

Diameter
7,918 mi
12,742 km

ORBIT

1 planet day	1 Earth days
1 planet years	1 Earth years

EXPLORATION



MOONS

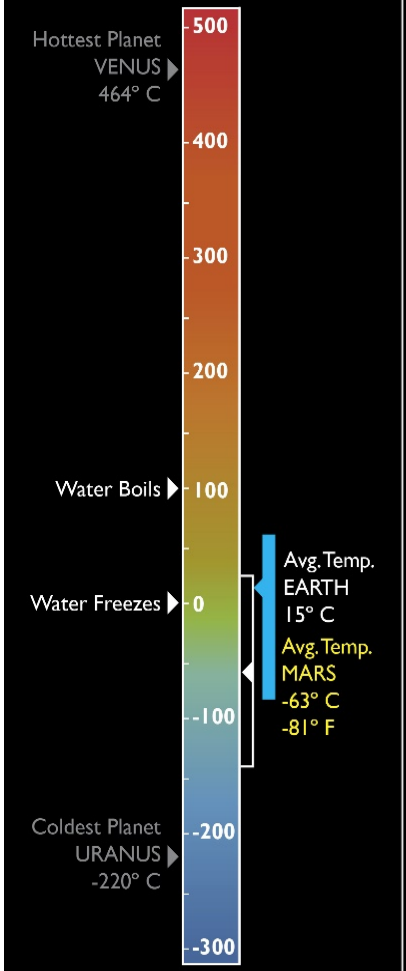
1
moon

Mars

DISTANCE FROM THE SUN 142,000,000 mi 1.52 au

SUN — MERCURY — VENUS — EARTH — **MARS** — JUPITER — SATURN — URANUS — NEPTUNE

TEMPERATURE
Celsius



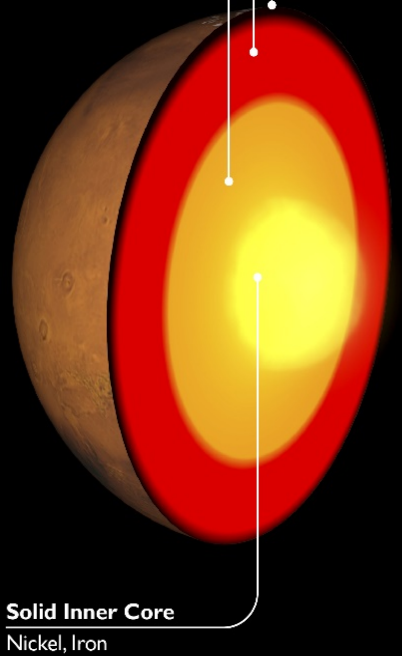
COMPOSITION & ATMOSPHERE

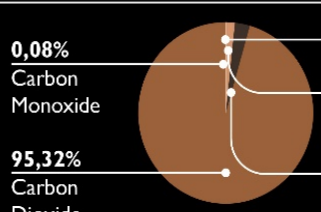
Crust
Iron-poor Silicates

Mantle
Iron-rich Silicates

Liquid Outer Core
Iron, Sulfur

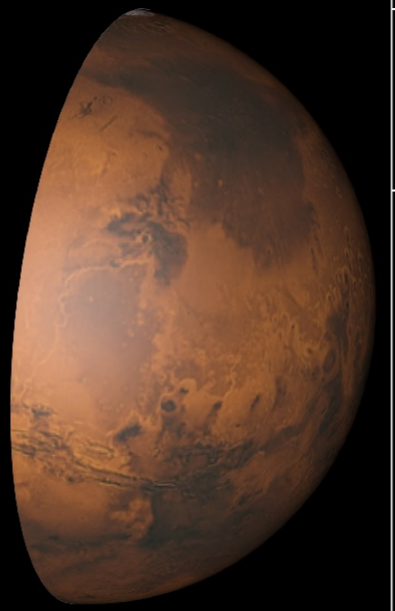
Solid Inner Core
Nickel, Iron



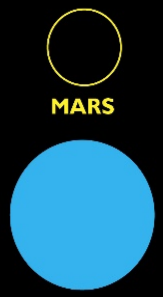


Thin

Mars's atmosphere is so thin that water cannot exist as a liquid on its surface. This lack of liquid water makes the current surface of Mars an inhospitable place for life



SIZE & SCALE



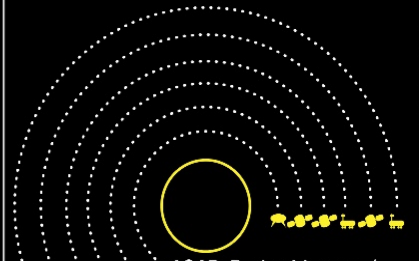
Mass
0.107 Earths

Diameter
4,212 mi
6,779 km

ORBIT

1 planet day	24 hours 40 minutes
1 planet years	1.88 Earth years

EXPLORATION



1965 Probe: Mariner 4
1974 Orbiter: Mars 6
1976 Orbiter/Lander: Viking 1
1997 Lander/Rover: Pathfinder-Sojourner
2001 Orbiter: 2001 Mars Odyssey
2012 Rover: Mars Science Laboratory-Curiosity

MOONS

2

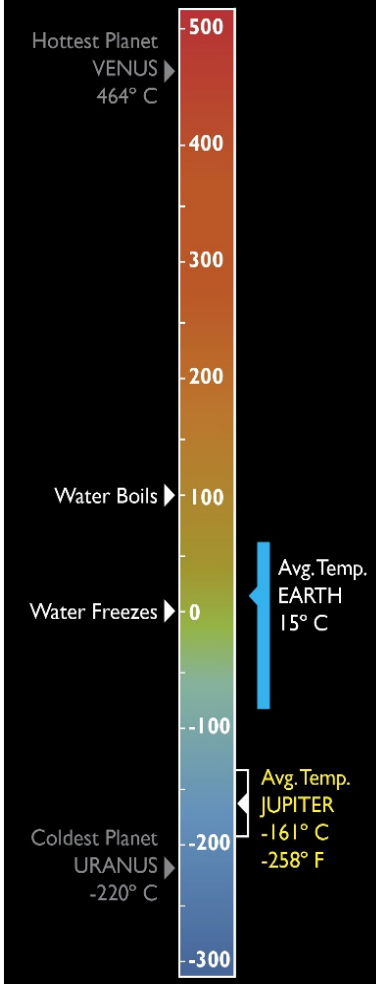
Mars has two small moons Deimos and Phobos

Jupiter

DISTANCE FROM THE SUN 484,000,000 mi 5.20 au

SUN — MERCURY — VENUS — EARTH — MARS — **JUPITER** — SATURN — URANUS — NEPTUNE

TEMPERATURE
Celsius

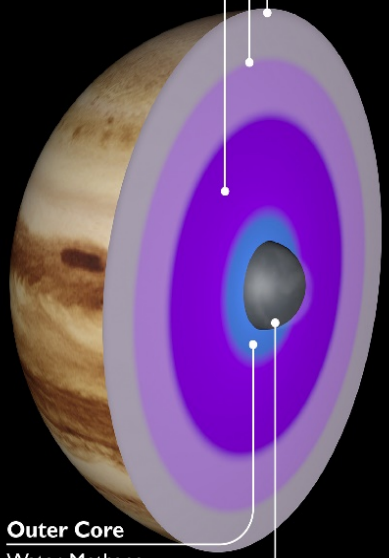


COMPOSITION & ATMOSPHERE

Atmosphere
Hydrogen, Helium Gases

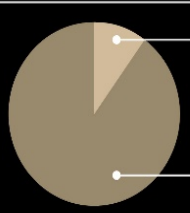
Outer Mantle
Liquid Hydrogen

Inner Mantle
Metallic Hydrogen



Outer Core
Water, Methane and Ammonia Ices

Inner Core
Silicates, Iron



10,2%
Helium plus Trace gases

89,8%
Hydrogen

Turbulent

Scientists are still unsure what gives rise to the colors in Jupiter's dark zones and light belts, but one leading idea is that they are due to trace amounts of colorful sulfur-bearing chemicals

SIZE & SCALE

EARTH

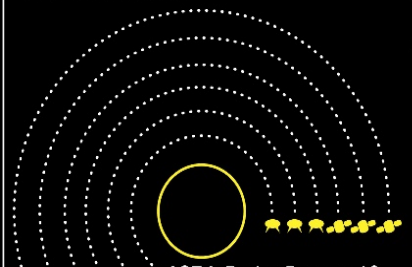
Mass
318 Earths

Diameter
86,881 mi
139,822 km

ORBIT

1 planet day	9 hours 56 minutes
1 planet years	11,86 Earth years

EXPLORATION



MOONS
66

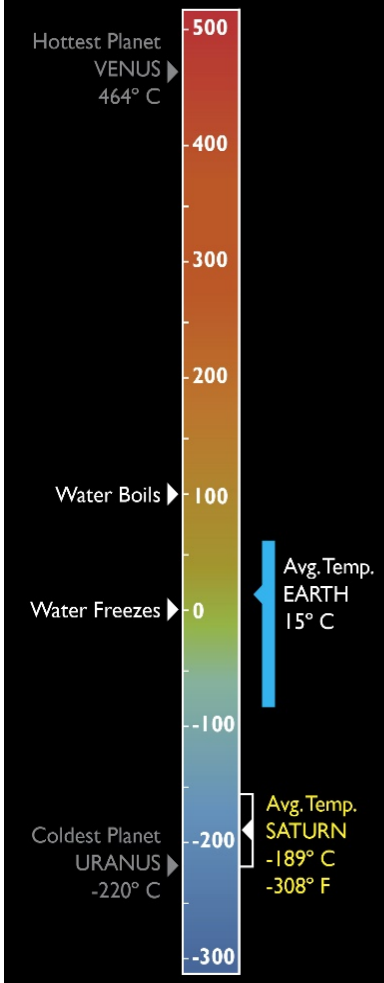
1974 Probe: Pioneer 10
1975 Probe: Pioneer 11
1979 Probe: Voyager 1
1995 Orbiter/Probe: Galileo
2000 Orbiter/Probe-Lander: Cassini-Huygens
2016 Orbiter: Juno

Saturn

DISTANCE FROM THE SUN 885,000,000 mi 9.54 au

SUN — MERCURY — VENUS — EARTH — MARS — JUPITER — **SATURN** — URANUS — NEPTUNE

TEMPERATURE
Celsius



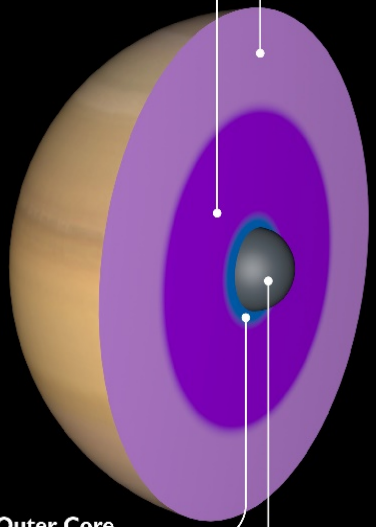
COMPOSITION & ATMOSPHERE

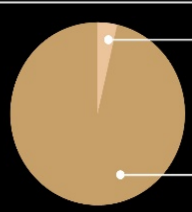
Atmosphere
Hydrogen, Helium Gases

Mantle
Metallic Hydrogen

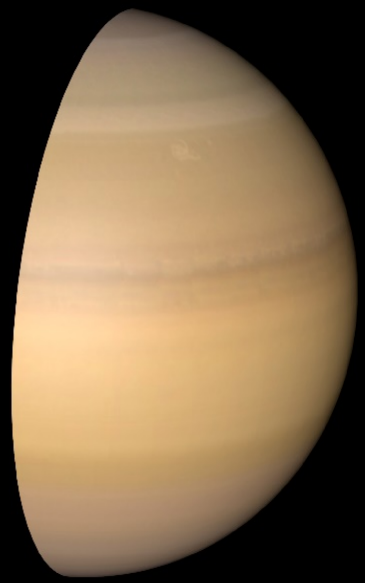
Outer Core
Water, Methane and Ammonia Ices

Inner Core
Silicates, Iron





Thick
Although they appear more muted than Jupiter's, Saturn's cloud bands are also made of ammonia, ammonium hydrosulfide and water ice



SIZE & SCALE

Mass
95,2 Earths

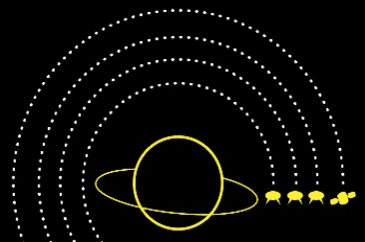
Diameter
72,367 mi
116,464 km

EARTH

ORBIT

1 planet day	10 hours 39 minutes
1 planet years	29,46 Earth years

EXPLORATION



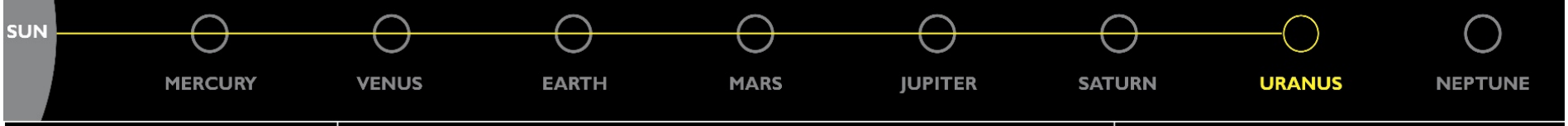
1979 Probe: Pioneer 11
1980 Probe: Voyager 1
1981 Probe: Voyager 2
2004 Orbiter/Probe-Lander: Cassini-Huygens

MOONS

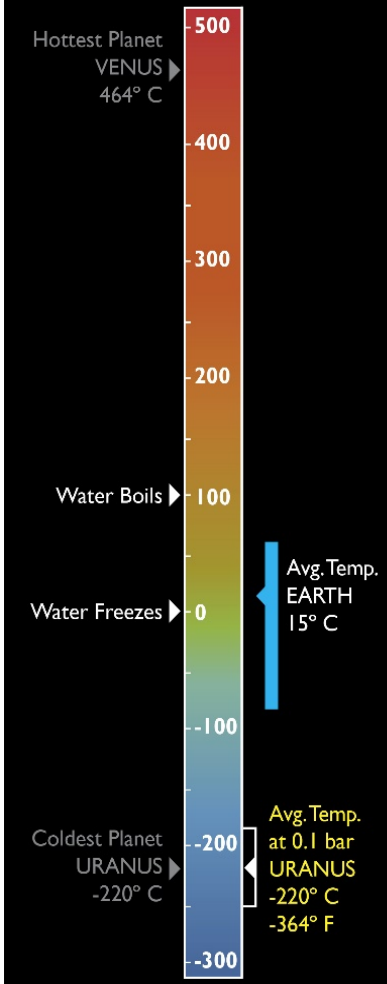
62

Uranus

DISTANCE FROM THE SUN 1,790,000,000 mi 19.19 au



TEMPERATURE
Celsius

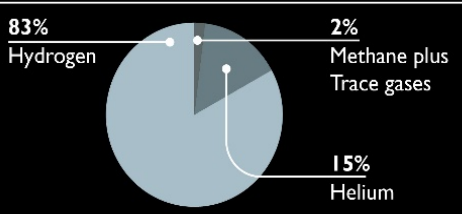


COMPOSITION & ATMOSPHERE

Atmosphere
Hydrogen, Helium Gases

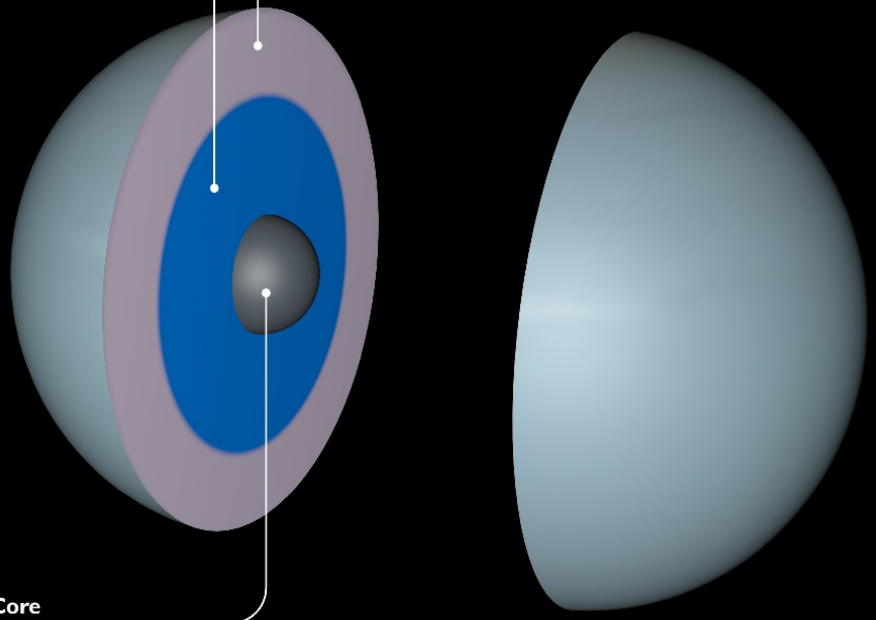
Mantle
Water, Methane
and Ammonia Ices

Core
Silicates, Iron



Azure Skies

Uranus's color comes from methane gas in the atmosphere absorbing red light and reflecting blue and green light



SIZE & SCALE

Mass
14,5 Earths

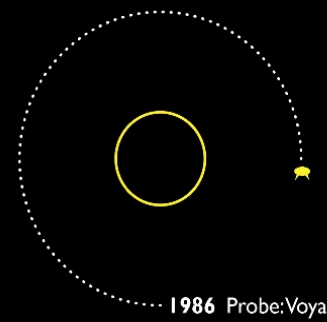
EARTH

Diameter
31,518 mi
50,724 km

ORBIT

1 planet day	17 hours 14 minutes
1 planet years	84 Earth years

EXPLORATION

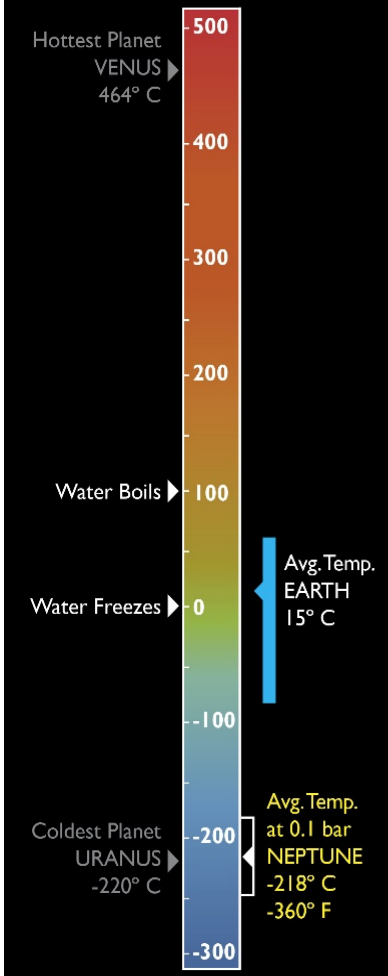


MOONS
27

Neptune

DISTANCE FROM THE SUN 2.800,000,000 mi 30.06 au

TEMPERATURE
Celsius

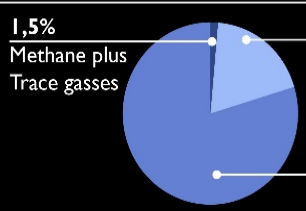


COMPOSITION & ATMOSPHERE

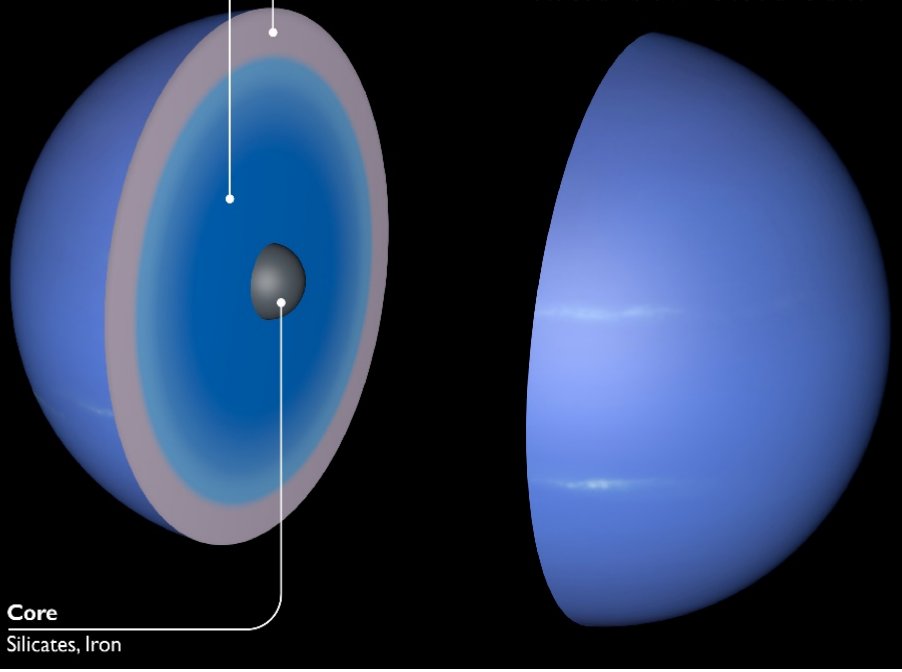
Atmosphere
Hydrogen, Helium Gases

Mantle
Water, Methane
and Ammonia Ices

Core
Silicates, Iron



Thick
Like Uranus's atmosphere Neptune's bluish color comes from methane gas absorbing red light. Some currently unknown trace component of Neptune's atmosphere causes it to be a more vivid blue than Uranus



SIZE & SCALE

Mass
17,1 Earths

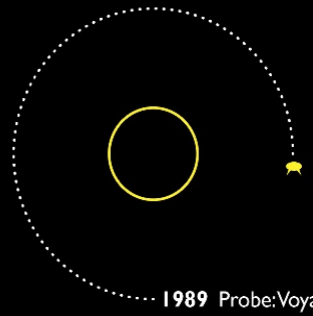
Diameter
30,599 mi
49,244 km

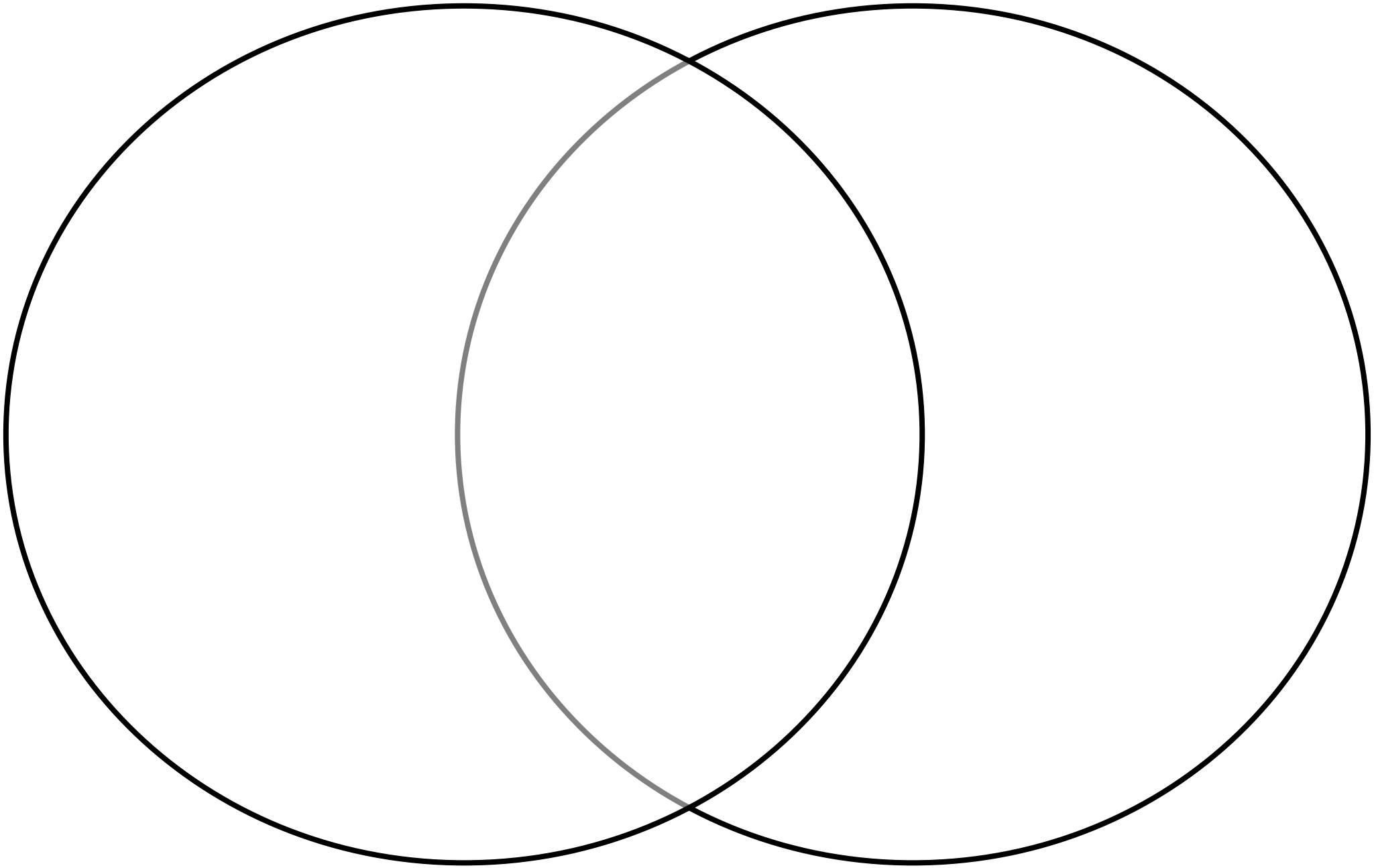
ORBIT

1 planet day	16 hours 7 minutes
1 planet years	165 Earth years

EXPLORATION

MOONS
13



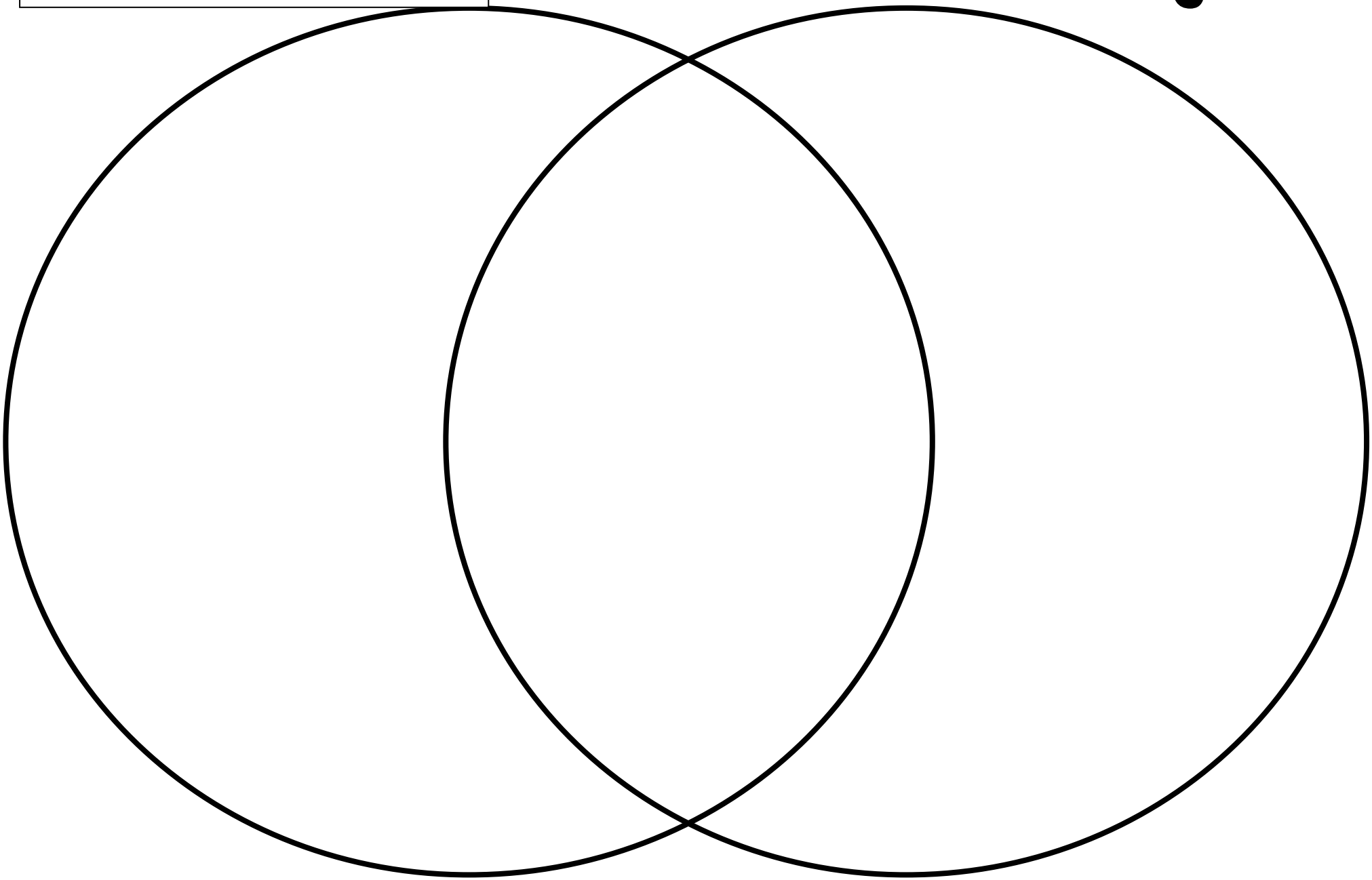


1 Inner Planet & 1 Outer Planet Venn Diagram

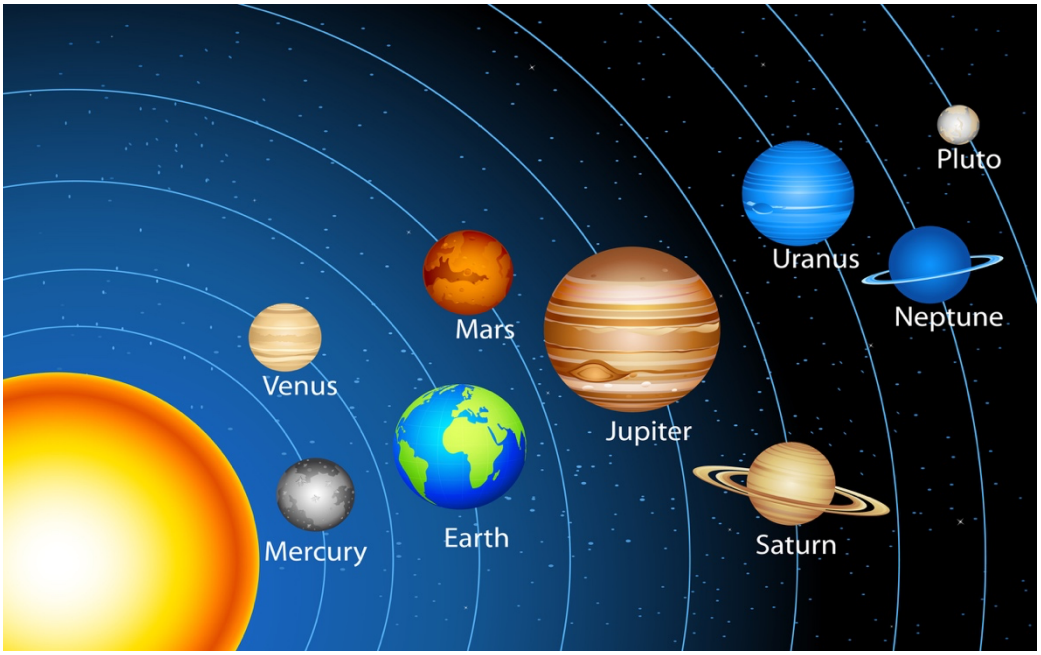
Name - _____ Hour - ___

DIRECTIONS: USE YOUR PLANET DATA CHART TO COMPLETE THE DIAGRAM.

2 Planets - Venn Diagram



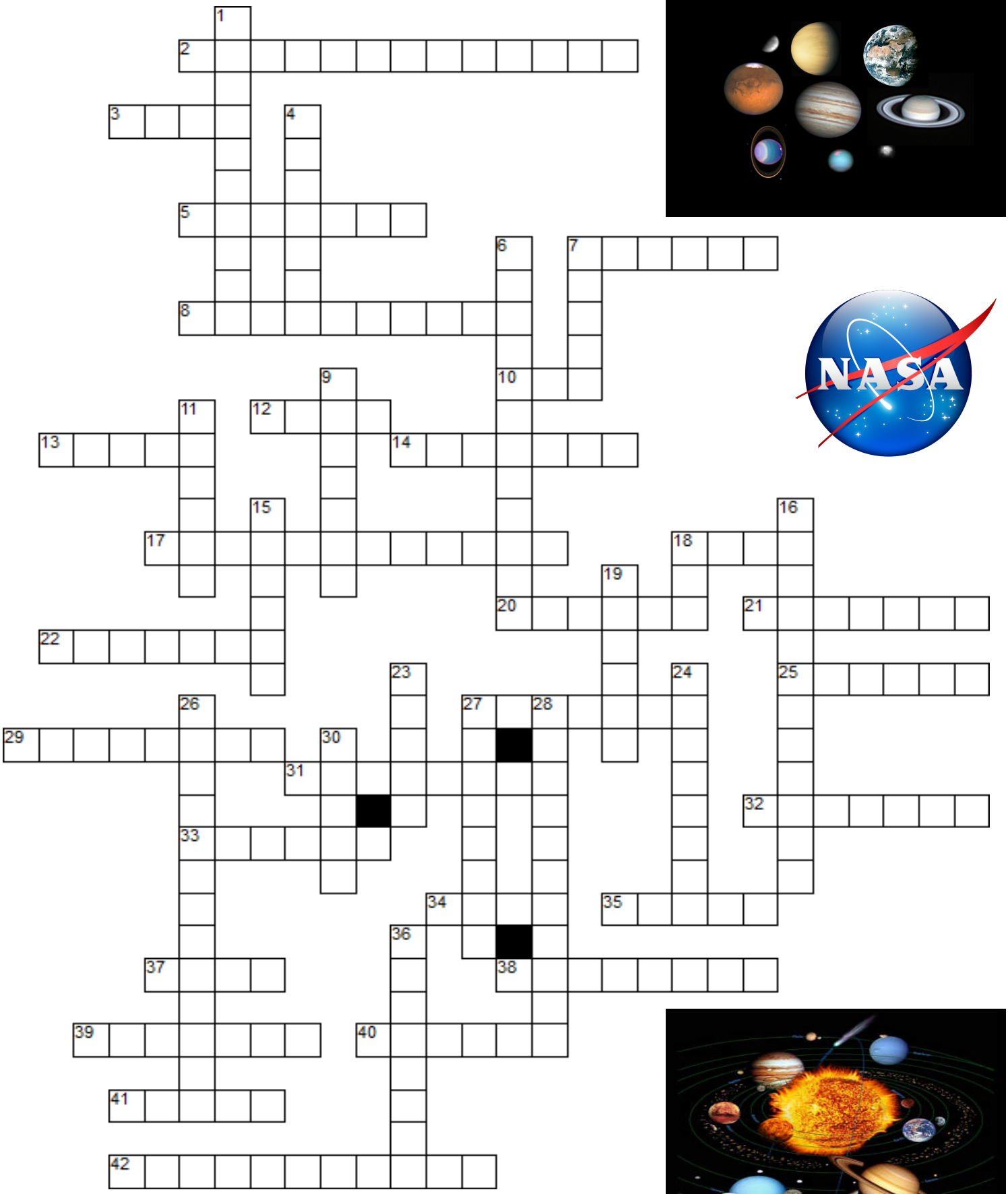
The Decision!



You have been researching all about the planets. You have learnt what they are made up of, what the temperature is like and what features the planets have. Some planets will be more appropriate than others for Space Tourists, for example some planets are made of gas, which may be less suitable for holiday visits. You must now choose 1 planet to focus on.

For my project, the **Next Best Holiday Destination is Planet** _____	Make a list in the space below of all the reasons why you have chosen this planet. Your reasons should not be silly, and they should be based on your research of the features of the planet and should show your understanding of the planet. **My REASONS for choosing this planet are:** • • • • • • • • •

Planets of the Milky Way



Planets of the Milky Way

Name - _____ Hour - _____

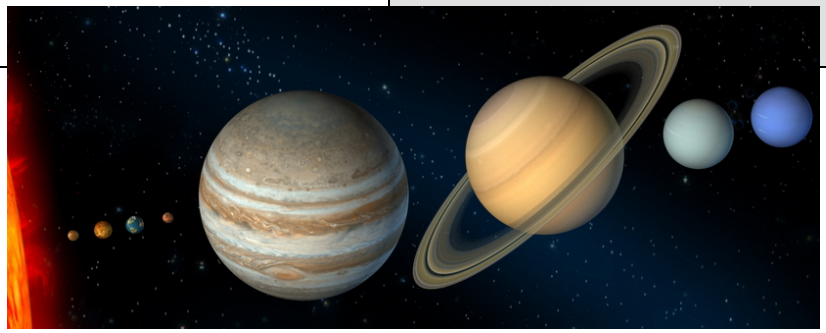
Directions: Use your Milky Way Planets data chart to complete the crossword.

Across Words

2. a massive storm that was spotted on Neptune
3. the primary color of Neptune
5. this probe studied Neptune in 1989
7. Deimos and _____ are the moons of Mars
8. Venus has a _____ rotation
10. number of moons that Mars has
12. On Mercury 88 days = 1 _____
13. this is the most dense planet in the solar system
14. In 2008 this probe studied Mars
17. the "wrinkles" on Mercury are called...
18. On Earth one revolution is 365 _____
20. the number of major ring systems that Saturn has
21. this gas gives Neptune its blue color
22. the fifth planet from the sun
25. Uranus has superheated _____ on the surface
27. the closest planet to the sun
29. Saturn is classified as a _____ Outer Planet
31. this probe studied Venus in 1989
32. the Hubble Space Telescope took photos of this planet in 1994
33. Neptune and Pluto occasionally switch _____
34. the Olympus Mons is found on this planets
35. Mercury is a _____ planet
37. the number of major rings around Jupiter
38. the direction the rings on Uranus travel
39. this probe studied Mercury in 1974
40. this planet was discovered in 1781
41. the primary color of Uranus
42. Pluto was reclassified to this in 2006

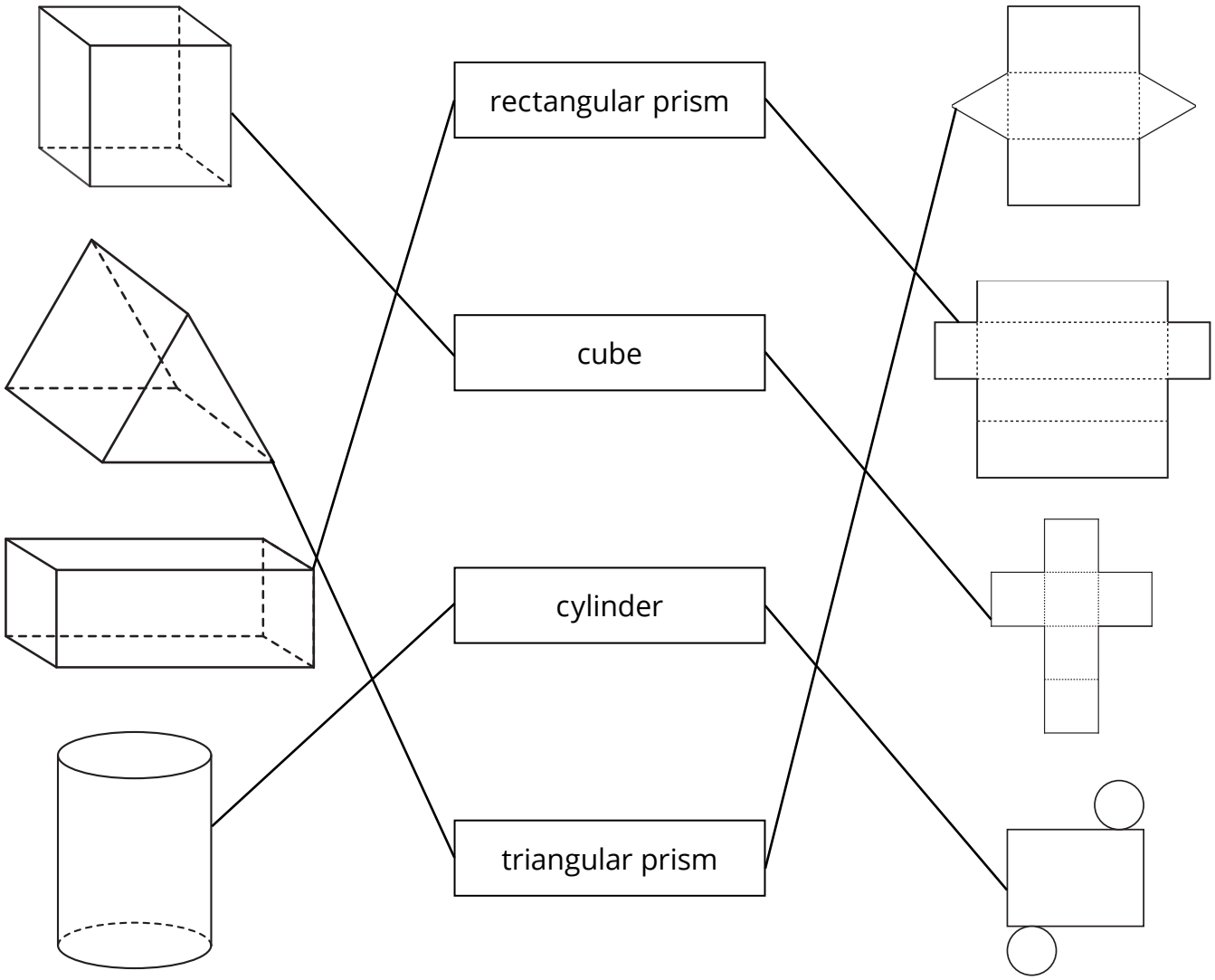
Down Words

1. the _____ effect makes Venus so hot
4. this probe studied Saturn in 1980
6. this is the massive storm on Jupiter
7. has an atmosphere of methane and carbon monoxide
9. this probe studied Jupiter in 2003
11. the largest moon of Pluto
15. Titan and Rhea are moons for this planet
16. Mars orbits next to this layer of rocks
18. on Pluto 1 _____ is 153.5 hours
19. this is the "sister" planet to Neptune
23. 71% of Earth's surface is _____
24. the primary gas in Jupiter's atmosphere
26. the primary gas in Venus' atmosphere
27. Venus is a planet in this galaxy
28. this part of Saturn was discovered in 1659
30. the third planet from the sun
36. 78% of Earth's atmosphere is this gas



Nets of 3D Objects (A) – Answers

1 Match the 3D object to its name and net.



2 Use the net to answer these questions.

a) If 1 is the base, what number is the top?

4

b) What numbers are on the sides of the shape?

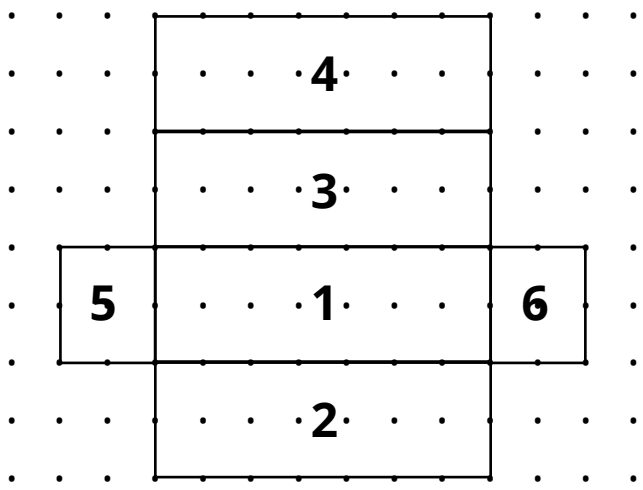
5, 6

c) If you stood the shape up with the 5 as the base, what number would be on top?

6

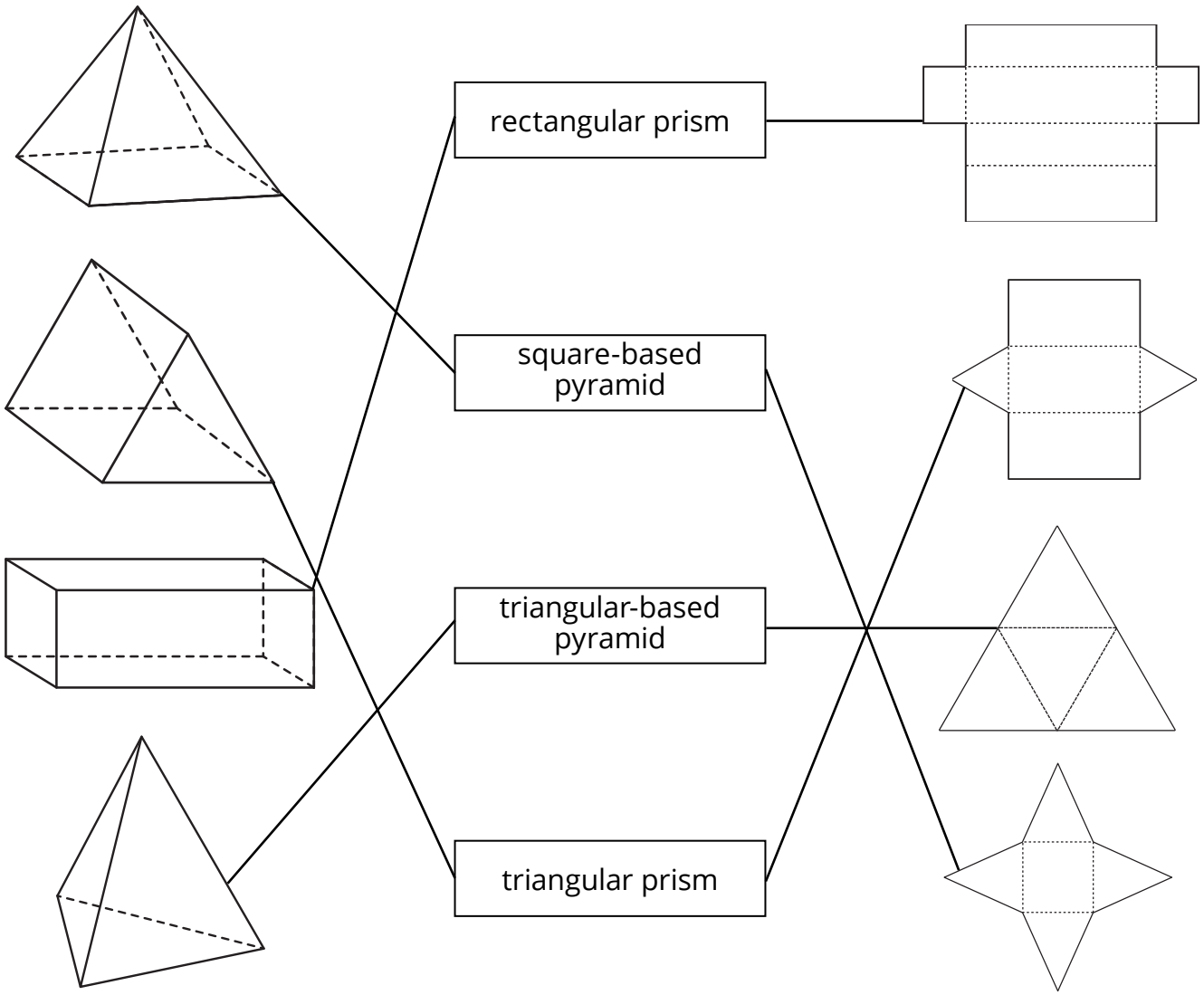
d) If 3 is the base, what number is on top?

2



Nets of 3D Objects (B) – Answers

1 Match the 3D object to its name and net.



2 Use the net to answer these questions.

a) If 1 is the base, what numbers are folded to make the top pieces?

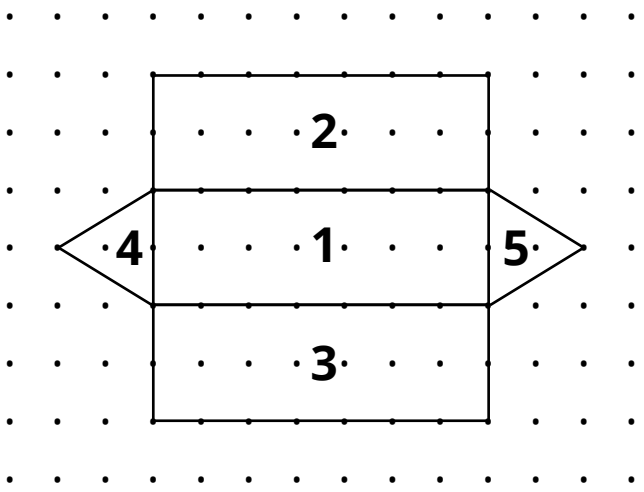
2, 3

b) If 1 is the base, what numbers are the sides?

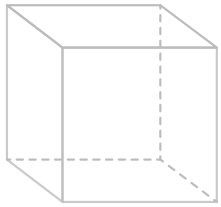
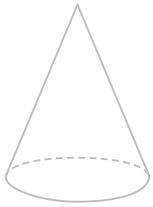
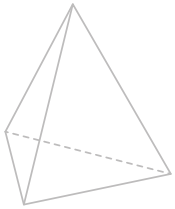
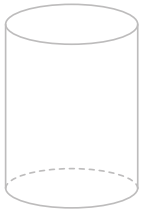
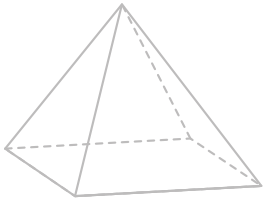
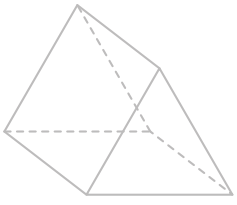
4, 5

c) If you stood the shape up with the 4 as the base, what number would be on top?

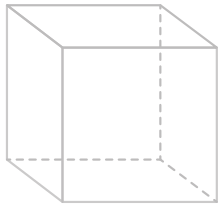
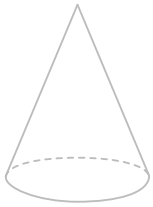
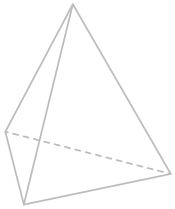
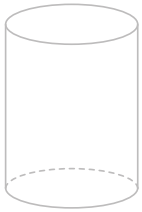
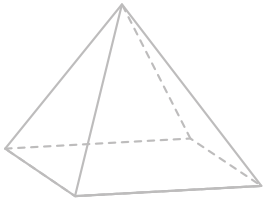
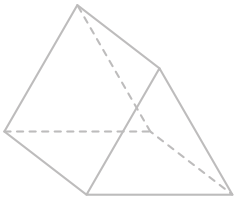
5



3D Object Properties – Answers

Trace the shape	Name	Edges	Faces	Vertices
	*cube*	*12*	*6*	*8*
	*rectangular prism*	*12*	*6*	*8*
	*cone*			
	*triangular based pyramid*	*6*	*4*	*4*
	*cylinder*			
	*square based pyramid*	*8*	*5*	*5*
	*triangular prism*	*9*	*5*	*6*

3D Object Properties - Answers

Trace the shape	Name	Edges	Faces	Vertices	Curved surfaces	Flat surfaces
	*cube*	*12*	*6*	*8*	*0*	*0*
	*rectangular prism*	*12*	*6*	*8*	*0*	*0*
	*cone*					
	*triangular based pyramid*	*6*	*4*	*4*	*0*	*0*
	*cylinder*					
	*square based pyramid*	*8*	*5*	*5*	*0*	*0*
	*triangular prism*	*9*	*5*	*6*	*0*	*0*