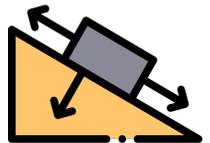




Helping With Math

Drawing And Describing 2D And 3D Figures

GRADE 7



In our everyday life, we always come across to different objects with different shapes and sizes. There are many things that surround us with shape such as circle, triangle, square and such.



Hello everyone!
I am Dolly the
doll, welcome to
HWM Toy Store!

In this worksheet, you will learn the different two-dimensional and three-dimensional shapes that we often see around us. After doing this worksheet, you will be able to identify and draw 2D and 3D figures.



Two-Dimensional Shapes



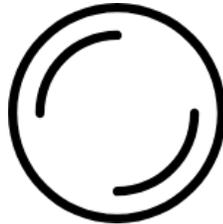
Two-dimensional Shapes

Two-dimensional figure or shape has a length and width. Moreover, any plane object that has only length and breadth is considered as a 2D or two-dimensional.

Look at the objects below:



paper



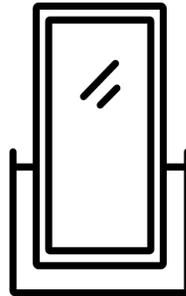
plate



rug



clock



mirror



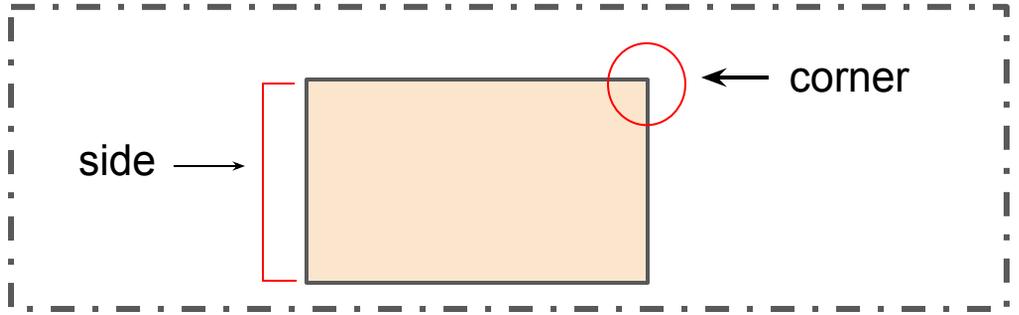
ATM

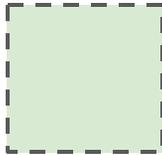
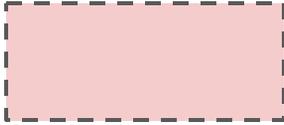
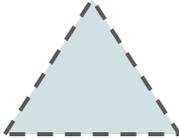
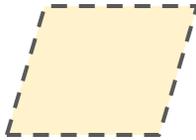
Observation:

The objects shown above are examples of two-dimensional objects. These objects have only length and width but no height. We often see these 2D objects at home, at school and everywhere we go.



COMMON 2D FIGURES



Name	Figure	Sides	Corners
Square		4	4
Rectangle		4	4
Triangle		3	3
Parallelogram		4	4
Trapezoid		4	4
Rhombus		4	4



Three-Dimensional Figures



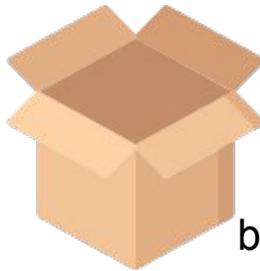
Three-dimensional Shapes

Three-dimensional (3D) figures are also called solid shapes. These shapes have faces, vertices and edges. The main characteristics of a 3D figure is that it has length, width and height.

Look at the objects below:



globe



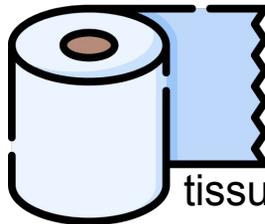
box



cabinet



Party hat



tissue



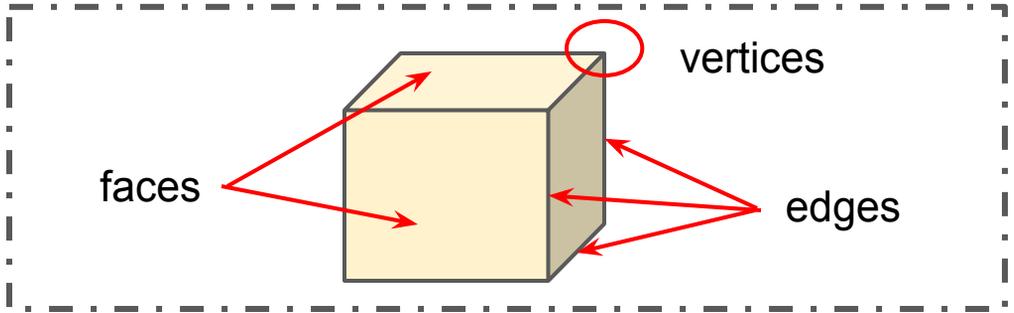
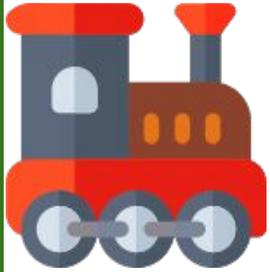
ball

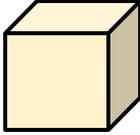
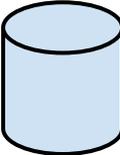
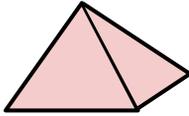
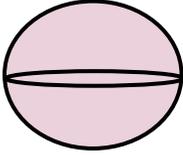
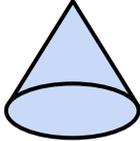
Observation:

As we can see, the figures above are all three-dimensional. These 3D objects have length, width and height.



COMMON 3D FIGURES

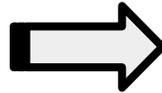
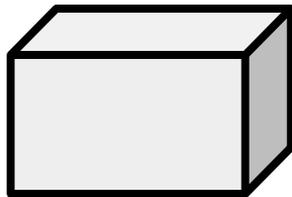
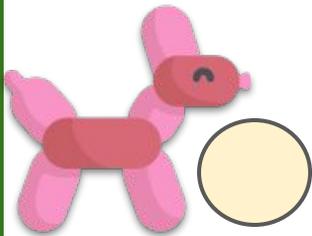


Name	Figure	Edges	Faces	Vertices
Cube		12 (equal)	6	8
Cylinder		2	3 (2 circles) (1 curved)	0
Pyramid (rectangular)		8	5	5
Prism (rectangular)		12	6	8
Sphere		0	1 (curved)	0
Cone		1	2 (1 circle)	1



2D FIGURES FROM 3D FIGURES

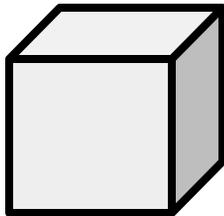
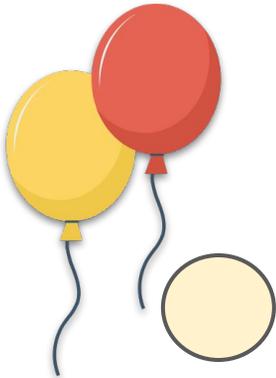
Slicing three-dimensional figures results to two-dimensional figures. Let's see examples below.



- Slicing a rectangular prism in front results to a rectangle.



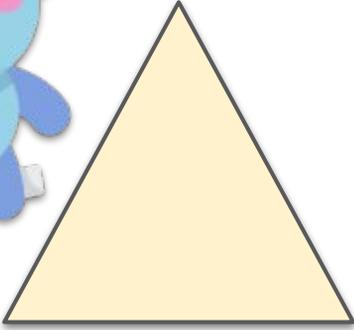
- Slicing a sphere results to a circle.



- Slicing a cube on one side results to a square



CONSTRUCTING TRIANGLES



- Triangle is a basic geometrical shape.
- It has three angles and three sides
- A triangle has a total angle measurement of 180°

DID YOU KNOW?

You can create a unique triangle if:

- SSS- You are given three sides measurements
- SAS- You are given two sides measurements and their included angle
- AAS- You are given two angles and their included side measurement
- ASA- You are given two angles and their included side measurement



You can create more than one triangle if:

- AAA- You are given three angles and no sides
- SSA- You are given two sides measurements and non-included angle

You cannot create one or more triangles if:

- You cannot satisfy the triangle inequality property which states that the sum of the lengths of two sides of the triangle must be greater than the third side of the triangle.



LET'S PRACTICE!



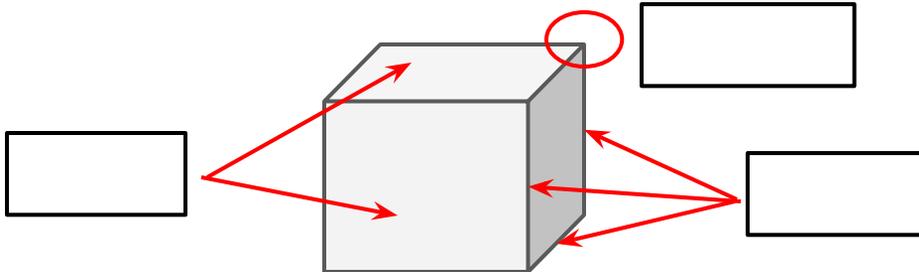
Identify the parts:



1.)

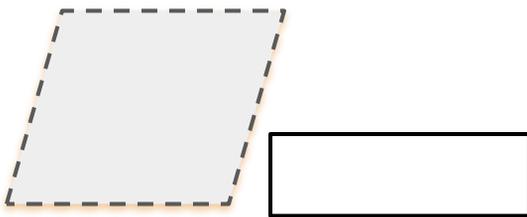


2.)

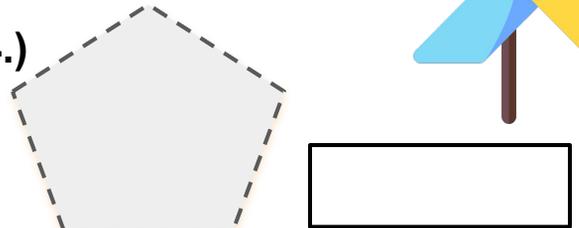


Name the following figures

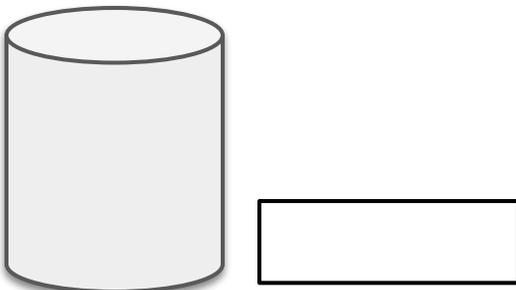
3.)



4.)



5.)



6.)

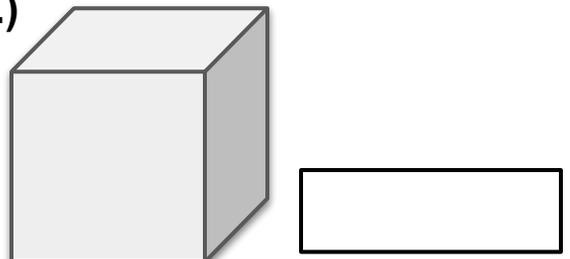


TABLE OF ACTIVITIES

1. Connect The Train Tracks
2. Speed Racers
3. Doll Mansion
4. Build-A-Bloc
5. Robot Battle
6. Doll House Party
7. Toy Soldier Troops
8. Spaceship Commander
9. Etch-A-Sketch
10. Toy Store Entrance



CONNECT THE TRAIN TRACKS

Help Klee the train connect the train tracks by drawing two-dimensional shapes below. Write at least 2 properties of each shape. Write your answers on the space provided.

1. Triangle

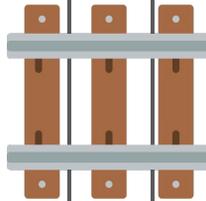
Drawing:

Properties:

2. Parallelogram

Drawing:

Properties:



3. Square

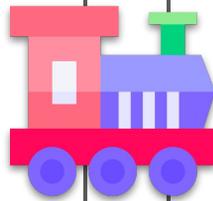
Drawing:

Properties:

4. Circle

Drawing:

Properties:



5. Rectangle

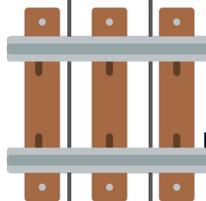
Drawing:

Properties:

6. Trapezoid

Drawing:

Properties:



SPEED RACERS

Gotta go fast! Race to the finish line. Read the statement carefully and choose the correct letter that matches what is being described in the statement. Draw the correct shape on the space provided.

1. It has a total angle of 360 degrees



- a. square
- b. circle
- c. triangle
- d. pentagon

2. It has 4 equal angles with 4 equal sides.



- a. square
- b. circle
- c. hexagon
- d. rectangle



3. It is a two-dimensional shape with six sides



- a. square
- b. circle
- c. hexagon
- d. rectangle

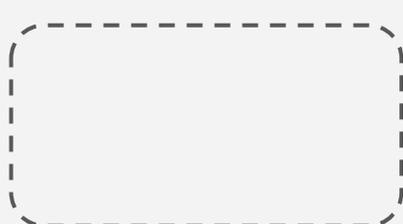
4. It has 2 sets of 2 equal sides and it has 4 equal angles



- a. square
- b. pentagon
- c. triangle
- d. rectangle



5. It is a two-dimensional shape with five sides



- a. square
- b. pentagon
- c. triangle
- d. rectangle



6. It is a two-dimensional shape with three sides.



- a. square
- b. circle
- c. triangle
- d. rectangle



DOLL MANSION

Lei the Doll is having a grand tour at her Mansion. Look around you and find objects that are two-dimensional, write the object's name and draw it inside the box below. Also do this for three-dimensional objects.

2D Objects:



1.

2.

3.

3D Objects:



4.

5.

6.



BUILD-A-BLOC

Let's help rebuild the city by drawing triangles based on the given conditions. Use a protractor and a ruler in this activity.

1. A triangle with angles 30° , 60° , and 90° .

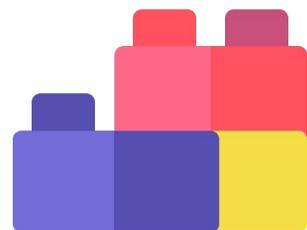
2. A triangle with sides that measure 5cm, 6.2cm, and 7cm.

3. Draw a triangle with sides measuring 7 cm and 5 cm and a non-included angle 45° .

4. Draw a triangle with an angle of 15° .

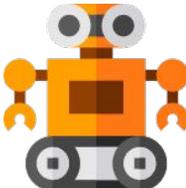
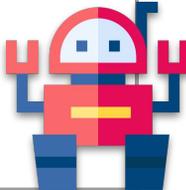
5. Draw a triangle with two sides measuring 6 cm and 4 cm and an included angle of 30° .

6. Draw a triangle with two angles that are 25° and 56° and an included side of 5cm.



ROBOT BATTLE

Command your robot by controlling the power button. Put a check mark on the correct answer. Decide whether the following conditions make a unique triangle, more than one triangle or no triangle. Justify your answer.

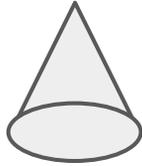
<p>1. Side A = 4 cm Side B = 5 cm Included angle B = 40°</p>	<p>2. Side B = 5 cm Side C = 6 cm Non-included angle B = 30°</p>
<p><input type="checkbox"/> Unique triangle <input type="checkbox"/> More than one triangle <input type="checkbox"/> No triangle</p> <p>Reason:</p> 	<p><input type="checkbox"/> Unique triangle <input type="checkbox"/> More than one triangle <input type="checkbox"/> No triangle</p> <p>Reason:</p>
<p>5. Side A = 6 cm Side B = 6 cm Side C = 9 cm</p>	<p>4. Side A = 4.3 cm Side B = 5.5 cm Side C = 7 cm</p>
<p><input type="checkbox"/> Unique triangle <input type="checkbox"/> More than one triangle <input type="checkbox"/> No triangle</p> <p>Reason:</p> 	<p><input type="checkbox"/> Unique triangle <input type="checkbox"/> More than one triangle <input type="checkbox"/> No triangle</p> <p>Reason:</p> 



DOLL HOUSE PARTY

To enter Lei's party you must answer the password. Based on the figures, identify the number of faces, edges and vertices by completing the phrases below.

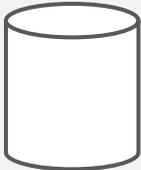
1



- It has ___ faces
- It has ___ edges
- It has ___ vertices

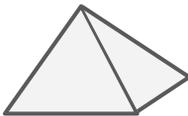


2



- It has ___ faces
- It has ___ edges
- It has ___ vertices

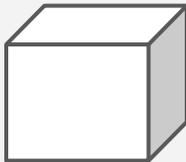
3



- It has ___ faces
- It has ___ edges
- It has ___ vertices

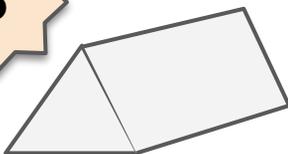


4



- It has ___ faces
- It has ___ edges
- It has ___ vertices

5



- It has ___ faces
- It has ___ edges
- It has ___ vertices



TOY SOLDIER TROOPS

Attention! Report Soldier! Given the number of faces, edges and vertices, identify what type of three-dimensional figures are being described. Encircle the correct letter.

1.)

Faces: 5

Edges: 5

Vertices: 8

a. cylinder

b. cube

c. pyramid

d. prism



2.)

Faces: 5

Edges: 9

Vertices: 6

a. cylinder

b. cube

c. cone

d. triangular prism

4.)

Faces: 6

Edges: 12

(equal)

Vertices: 8

a. cylinder

b. cube

c. cone

d. rectangular prism

3.)

Faces: 6

Edges: 12

Vertices: 8

a. cylinder

b. cube

c. cone

d. rectangular prism

5.)

Faces: 2

Edges: 1

Vertices: 1

a. cylinder

b. cube

c. cone

d. rectangular prism

6.)

Faces: 3

Edges: 2

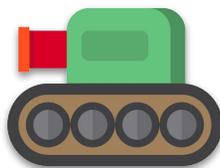
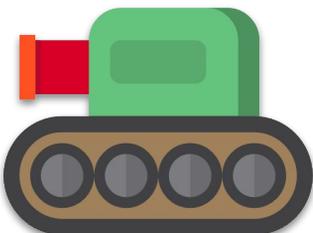
Vertices: 0

a. cylinder

b. cube

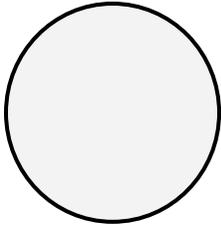
c. cone

d. rectangular prism



SPACESHIP COMMANDER

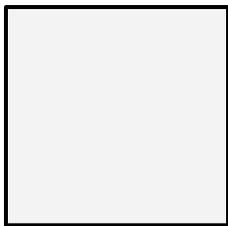
Greetings Earthling, could you help us go home? Match the figures below. Describe the 2D figure that results in slicing the 3d figures. Justify your answer on the space provided.



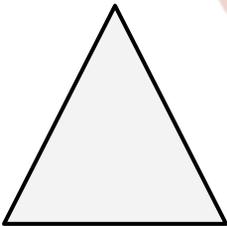
1. _____



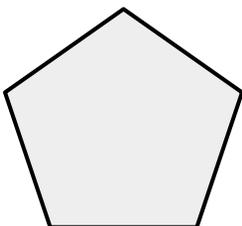
2. _____



3. _____

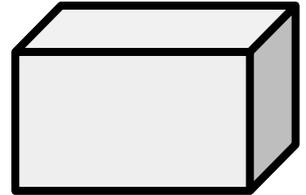


4. _____



5. _____

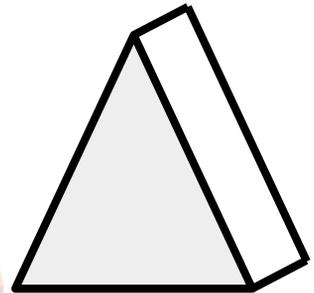
A



B



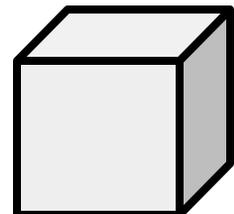
C



D



E

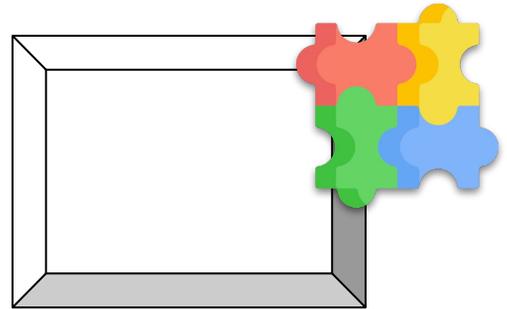
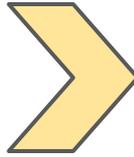


ETCH-A-SKETCH

Hone your artistic skills in ToyWorld's art section. Based on the given number of faces, vertices and edges, draw the three-dimensional shape described. Draw in the box provided.

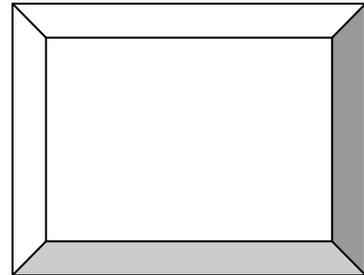
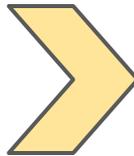
1

- It has 6 faces
- It has 8 vertices
- It has 12 equal edges



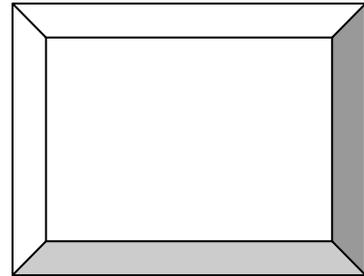
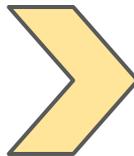
2

- It has 1 curved face
- It has 1 vertex
- It has 1 edge
- It has 1 flat face-circle



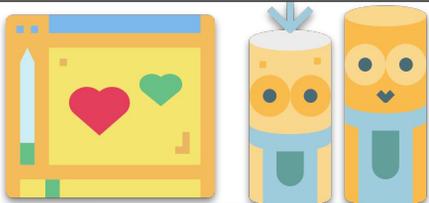
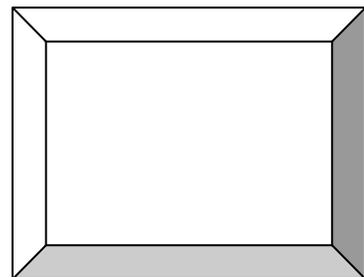
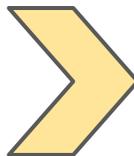
3

- It has 1 curved face
- It has no vertex
- It has no edge



4

- It has 2 flat faces-circle
- It has no vertex
- It has 2 edges
- It has 1 curved face



TOY STORE ENTRANCE

Welcome to ToyWorld! We hope you are enjoying yourselves. Please help yourself to any toy you see. Read each problem carefully and provide the correct answer.

1. Liza bought a container for her stuff. The container has 2 circular bases and 1 curved face. It has no edges and vertices. Draw the container and identify its name.

2. If you have 3 cubes and 2 rectangular prisms, how many edges are there in all? Justify your answer.



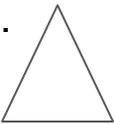
3. Mike has a cardboard and he cut a shape from it. The shape has 5 corners and 5 sides. What shape did he cut? Draw the shape to justify your answer.

4. Your sister gave you a gift with 8 vertices, 6 faces and 12 equal edges. What is the shape of the gift? Draw the shape.

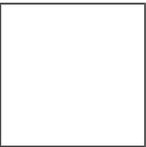


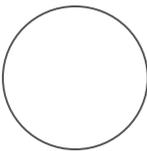
ANSWER GUIDE

Activity 1

1.  - It has 3 sides.
- It has a total angle measure of 180°

2.  - It has 2 sets of 2 equal sides.
- It has 2 sets of 2 equal angles.

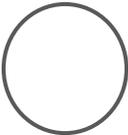
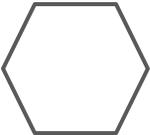
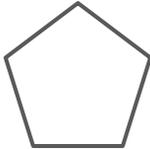
3.  - It has 4 equal sides.
- It has 4 equal angles.

4.  - It has no corners and sides.
- It has a total angle measure of 360°

5.  - It has 2 sets of 2 equal sides
- It has 4 equal angles

6.  - It has equal legs.
- Its lower base angles are equal.

Activity 2

1. b  3. c  5. b 
2. a  4. d  6. c 

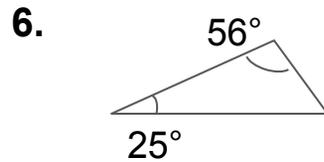
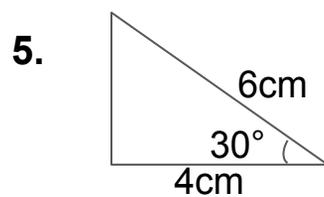
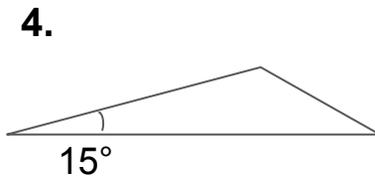
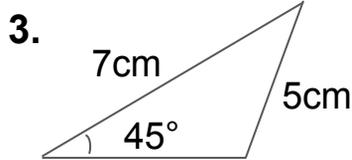
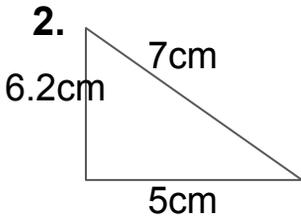
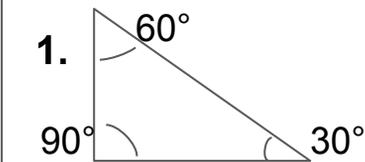
Activity 3

Answers may vary.



ANSWER GUIDE

Activity 4



Activity 5

1. Unique triangle

Reason: Knowing 2 sides and included angle tells you it's a unique triangle.

2. No triangle

Reason: If one of the two shorter sides is equal to the third side, no triangle can be formed.

2. More than 1 triangle

Reason: Knowing 2 sides and a non-included angle is not enough for a unique triangle, thus it may make more than 1 triangle.

4. Unique triangle

Reason: Knowing 3 sides of the triangle tells you it's a unique triangle.

Activity 6

1. It has 2 faces

It has 1 edge

It has 1 vertex

2. It has 3 faces

It has 2 edges

It has no vertex

4. It has 5 faces

It has 8 edges

It has 5 vertices

4. It has 6 faces

It has 12 edges

It has 8 vertices

5. It has 5 faces

It has 9 edges

It has 6 vertices



ANSWER GUIDE

Activity 7

- | | | |
|------|------|------|
| 1. c | 3. d | 5. c |
| 2. d | 4. b | 6. a |

Activity 8

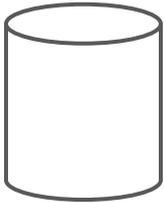
1. d 2. a 3. e 4. c 5. b

Activity 9

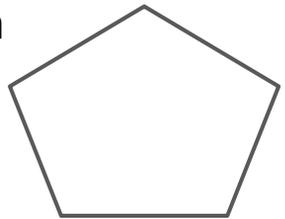


Activity 10

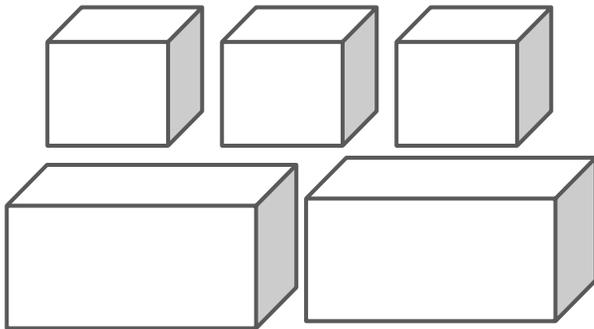
1. cylinder



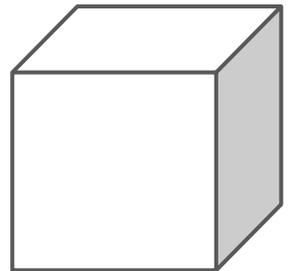
3. pentagon



2.



4. cube



cube = $12 \times 3 = 36$ edges

rectangular prism = $12 \times 2 = 24$ edges

Total: 60 edges



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