16. [Shapes]

Skill 16.1 Recognising 3D shapes (1).

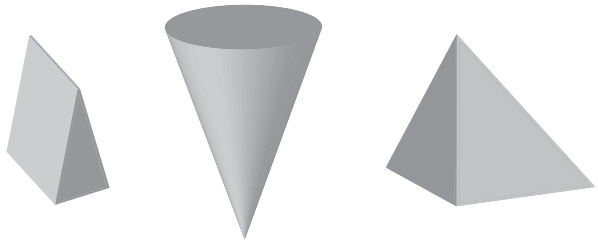
- Observe whether the 3D shape has a curved surface.
  If so, the shape will be either a cone, cylinder or sphere.
- Observe whether the curved surface formes a cone (narrowing to a point), a cylinder (sitting on two circular bases) or a sphere (perfectly round).
- If all surfaces are flat, then decide if the shape is a pyramid (narrowing to a point) or a prism (rectangular side faces).
- Observe whether the two bases of the prism are rectangles (rectangular prism), squares (square prism) or triangles (triangle prism).

Q. What shape is this object?

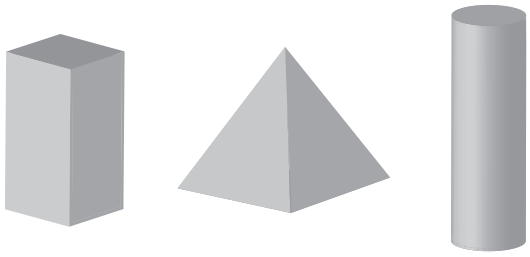
A. ***sphere***

a) Circle the cube.

b) Circle the cone.

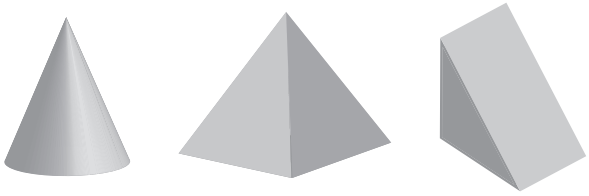


c) Circle the cylinder.

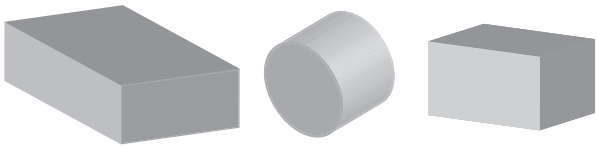


d) Circle the sphere.

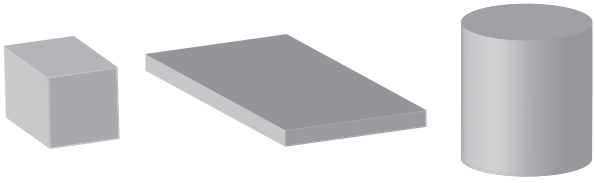
e) Circle the pyramid.



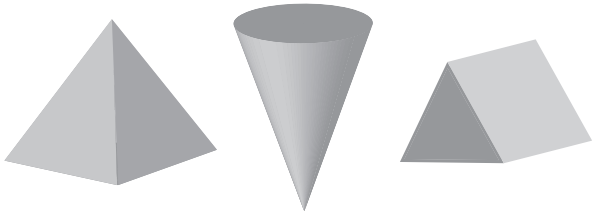
f) Circle the square prism.



g) Circle the rectangular prism.



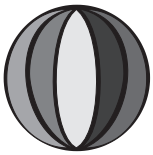
h) Circle the triangular prism.



Skill 16.1 Recognising 3D shapes (2).

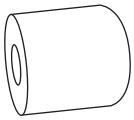
i) What shape is this object?

j) What shape is this object?

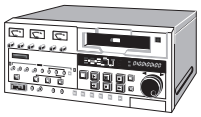


k) What shape is this object?

l) What shape is this object?

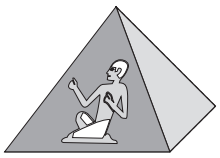


m) What shape is this object?

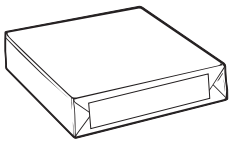


n) What shape is this object?

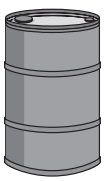
o) What shape is this object?



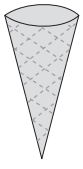
p) What shape is this object?



q) What shape is this object?



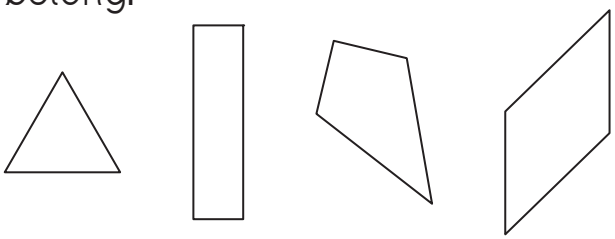
r) What shape is this object?



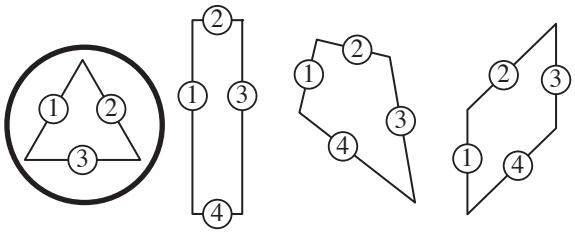
Skill 16.2 Recognising properties of 2D shapes.

- Count and compare the number of sides.
- Check whether the shape has straight or curved sides.

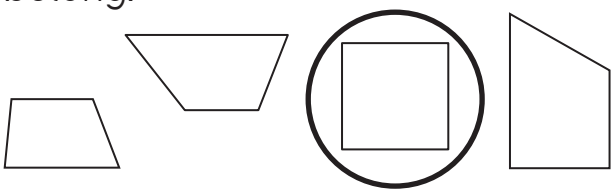
Q. Circle the shape that does **not** belong.



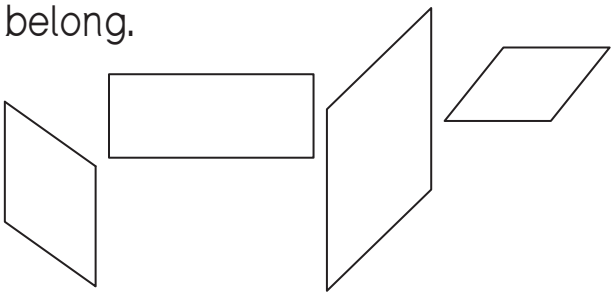
A.



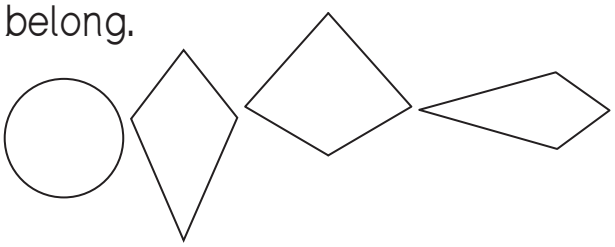
a) Circle the shape that does **not** belong.



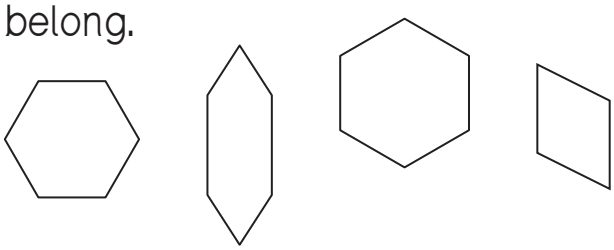
b) Circle the shape that does **not** belong.



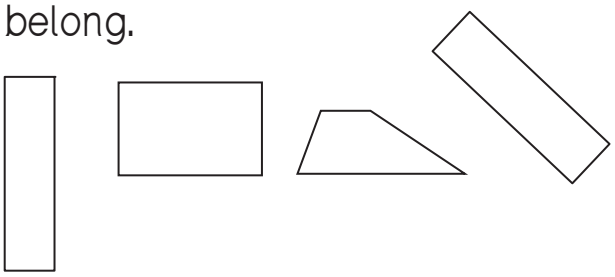
c) Circle the shape that does **not** belong.



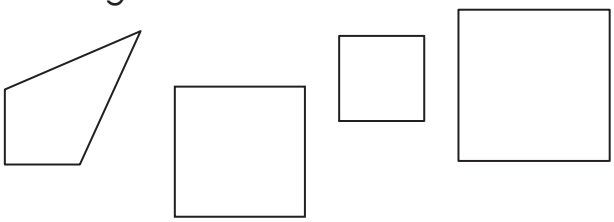
d) Circle the shape that does **not** belong.



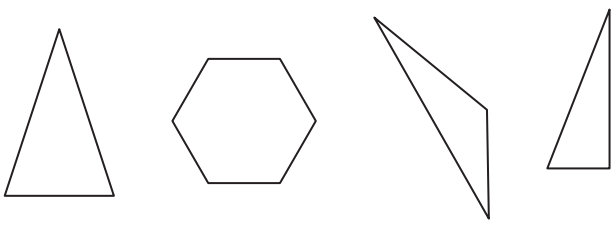
e) Circle the shape that does **not** belong.



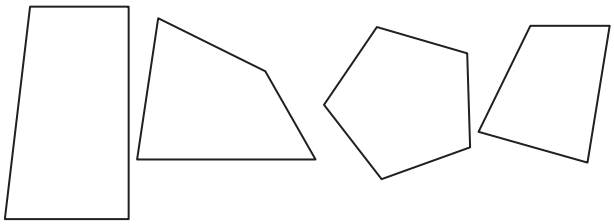
f) Circle the shape that does **not** belong.



g) Circle the shape that does **not** belong.

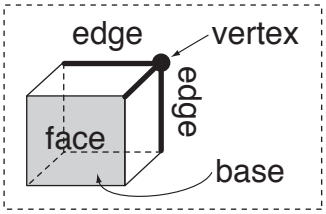


h) Circle the shape that does **not** belong.

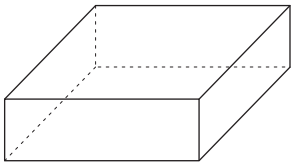


Skill 16.3 Counting vertices, edges and faces of 3D shapes.

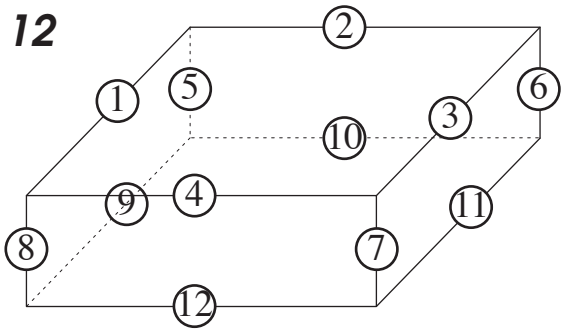
- See Glossary.



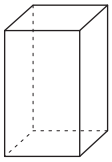
Q. How many edges does a rectangular prism have?



A. ***12***

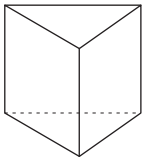


a) How many edges does a square prism have?

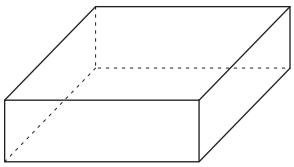


12

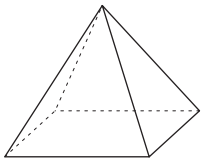
b) How many vertices does a triangular prism have?



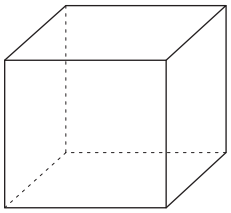
c) How many faces does a rectangular prism have?



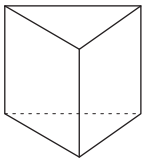
d) How many vertices does a square pyramid have?



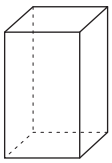
e) How many faces does a cube have?



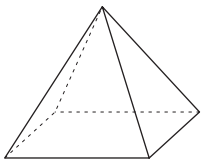
f) What shape is the base of a triangular prism?



g) What shape is the base of a square prism?



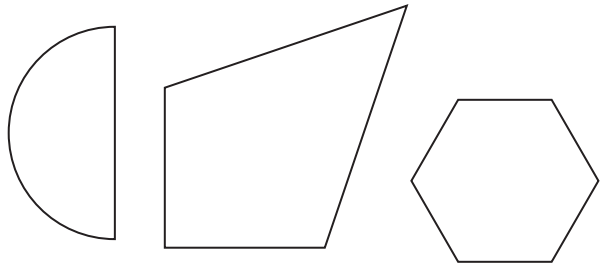
h) What shape is any lateral side of a pyramid?



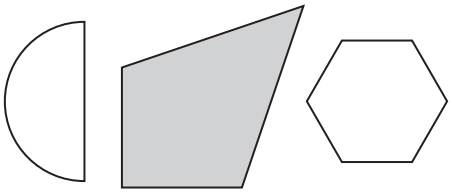
Skill 16.4 Recognising 2D shapes (1).

- See Glossary.

Q. Colour the kite.

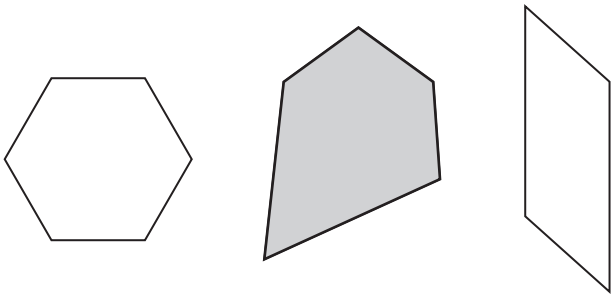


A.

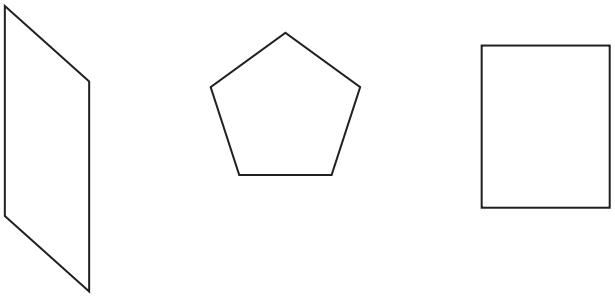


Shape 1 is a semicircle.
Shape 2 is a kite.
Shape 3 is a hexagon.

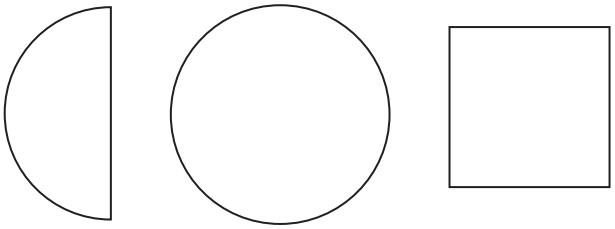
a) Colour the pentagon.



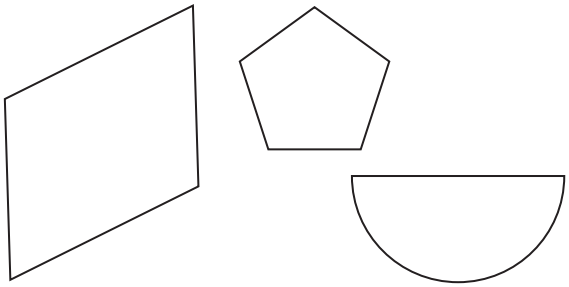
b) Colour the rectangle.



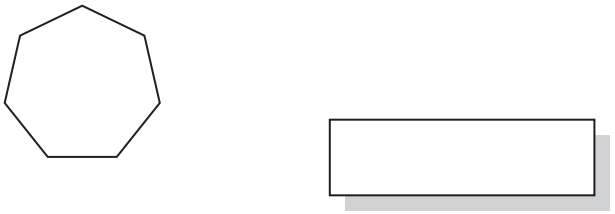
c) Colour the circle.



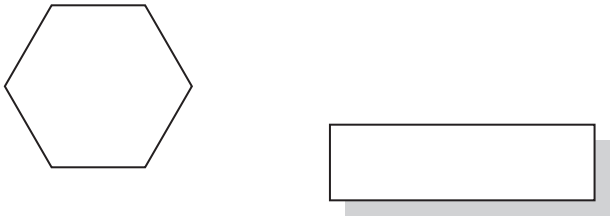
d) Colour the parallelogram.



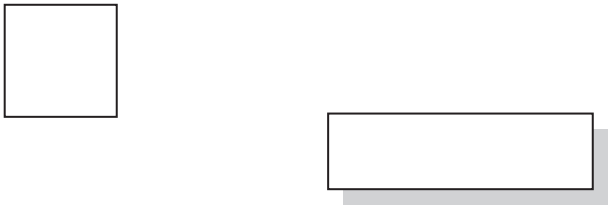
e) Name the shape.



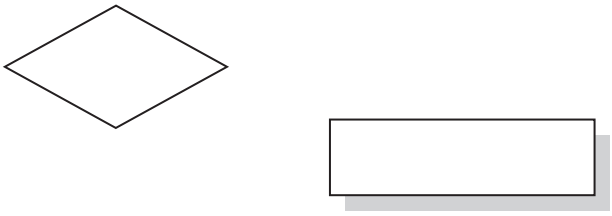
f) Name the shape.



g) Name the shape.

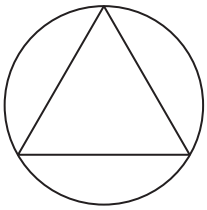


h) Name the shape.



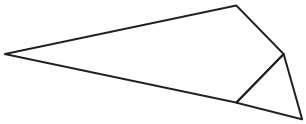
Skill 16.4 Recognising 2D shapes (2).

i) Name the two shapes used to make this figure.



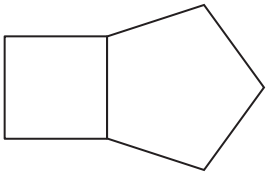
and

j) Name the two shapes used to make this figure.



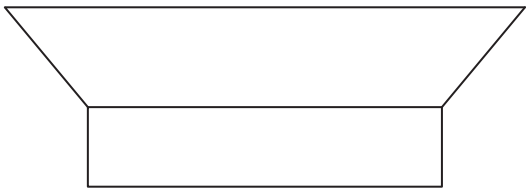
and

k) Name the two shapes used to make this figure.



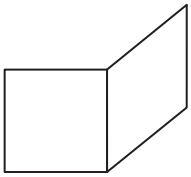
and

l) Name the two shapes used to make this figure.



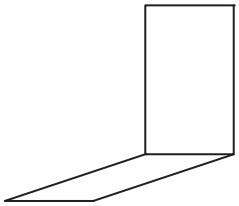
and

m) Name the two shapes used to make this figure.



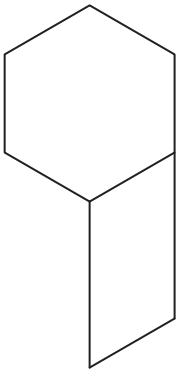
and

n) Name the two shapes used to make this figure.



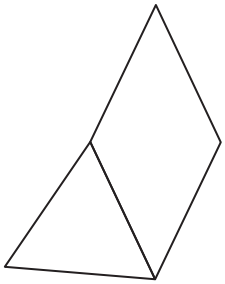
and

o) Name the two shapes used to make this figure.



and

p) Name the two shapes used to make this figure.

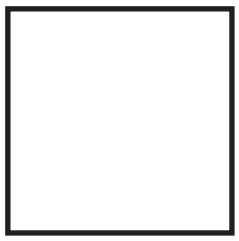


and

Skill 16.5 Drawing 2D shapes.

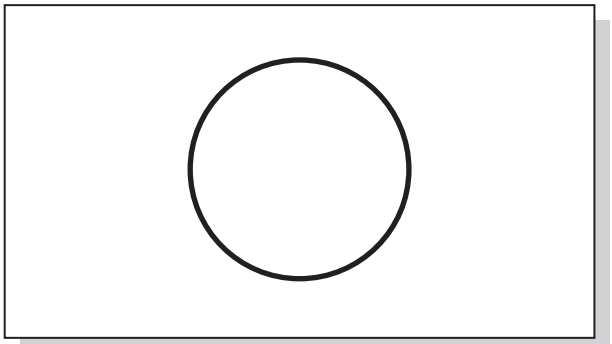
- See Glossary.

Q. Sketch a square.

A. 

Draw 4 equal lines, at right angles to each other.

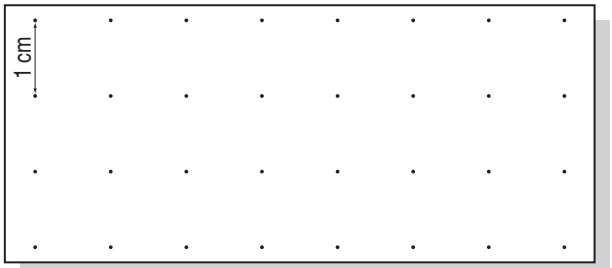
a) Sketch a circle.



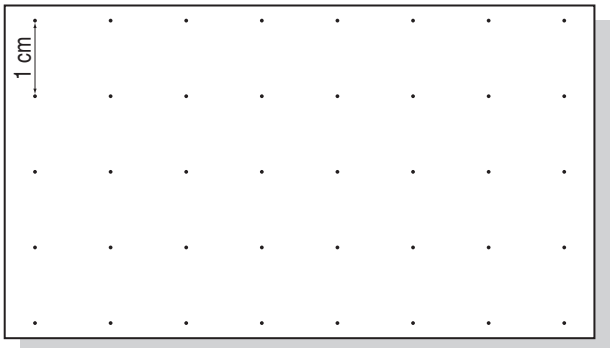
b) Sketch a heptagon.

c) Sketch an octagon.

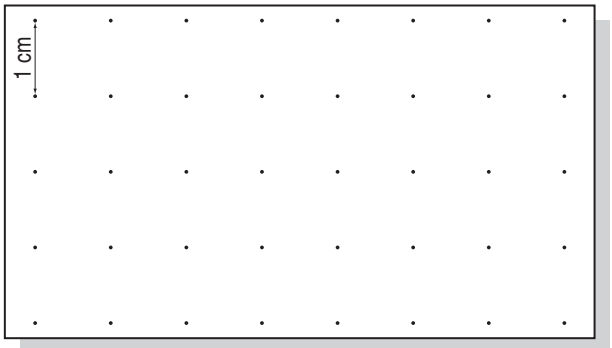
d) Draw a square of side length 1 cm on the grid.



e) Draw a rectangle with a length of 3 cm and a width of 1 cm on the grid.

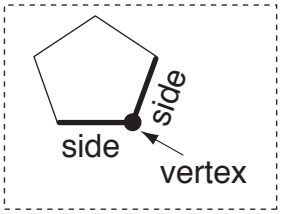


f) Draw a rectangle with a length of 4 cm and a width of 3 cm on the grid.

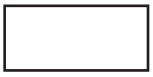


Skill 16.6 Counting vertices and sides of 2D shapes.

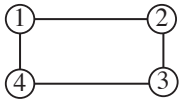
- See Glossary.



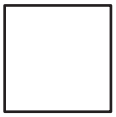
Q. How many vertices does a rectangle have?



A. ***4***

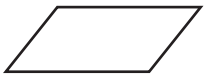


a) How many sides does a square have?

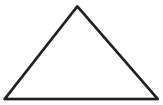


4

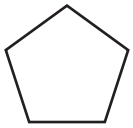
b) How many vertices does a parallelogram have?



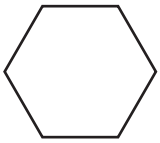
c) How many sides does a triangle have?



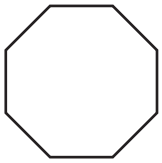
d) How many vertices does a pentagon have?



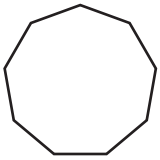
e) How many vertices does a hexagon have?



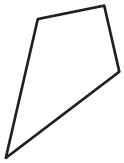
f) How many vertices does an octagon have?



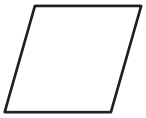
g) How many sides does a nonagon have?



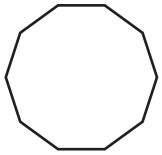
h) How many vertices does a kite have?



i) How many vertices does a rhombus have?



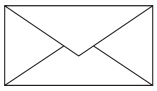
j) How many sides does a decagon have?

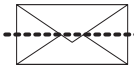


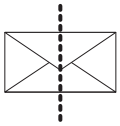
Skill 16.7 Drawing lines of symmetry in 2D shapes.

- Draw a line, or lines, through the middle of the shape.
- Check that, if you put a mirror on that line, what you see in the mirror is identical to what is behind the mirror.

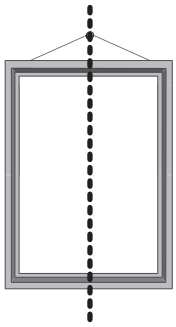
Q. Draw the line of symmetry.



A.  Incorrect. Top half is not identical to the bottom half.

 Correct. Both halves are identical.

a) Draw the line of symmetry.

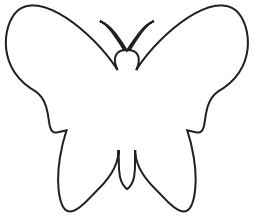


b) Draw the line of symmetry.

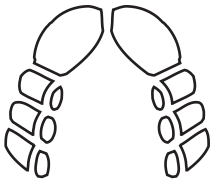
c) Draw the line of symmetry.

B

d) Draw the line of symmetry.



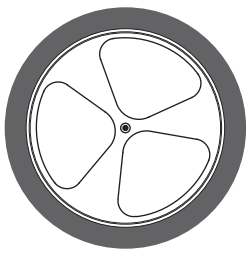
e) Draw the line of symmetry.



f) Draw the lines of symmetry.

H

g) Draw the lines of symmetry.



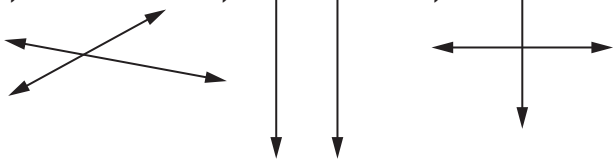
h) Draw the lines of symmetry.

Skill 16.8 Recognising and drawing pairs of parallel and perpendicular lines.

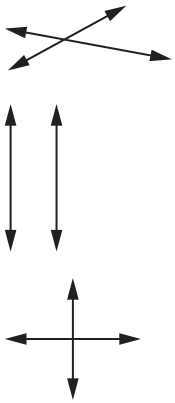
- See Glossary.

Q. Which lines are parallel?

A) B) C)



A. ***B***



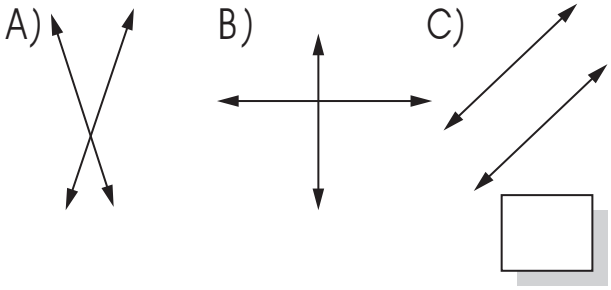
The lines meet at a point.
The lines are not parallel.

The lines never meet.
The lines are parallel.

The lines meet at a point.
The lines are not parallel.

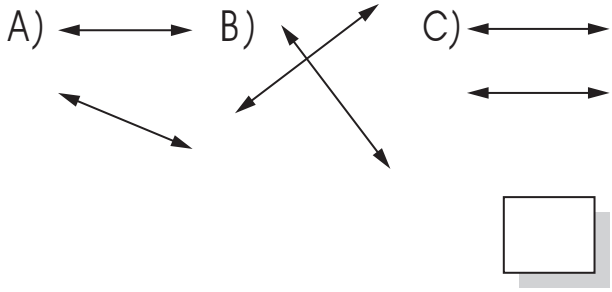
a) Which lines are perpendicular?

A) B) C)



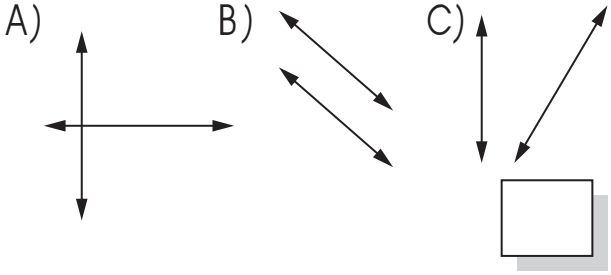
b) Which lines are parallel?

A) B) C)



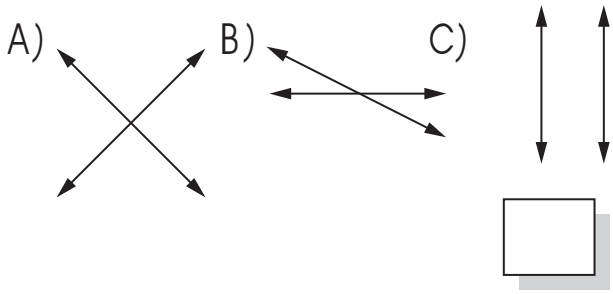
c) Which lines are perpendicular?

A) B) C)



d) Which lines are parallel?

A) B) C)



e) Draw a line parallel to this vertical line.

f) Draw a line perpendicular to this horizontal line.

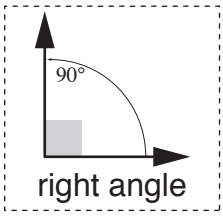
g) Draw a line perpendicular to this vertical line.

h) Draw a line parallel to this horizontal line.

Skill 16.9 Recognising and drawing different types of angles.

To recognise a type of angle

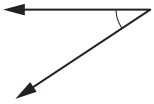
- Draw a right angle in the same corner and on the same line as each of the given angles.
- Compare each angle to the right angle inside.

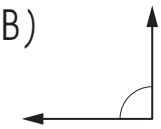


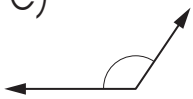
To draw a type of angle

- Draw a line starting from one end of the given line.
- Draw the line according to the type of angle required (see Glossary).
- Mark the angle with a dash.

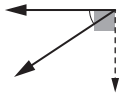
Q. Which angle is an obtuse angle?

A) 

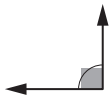
B) 

C) 

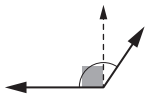
A. ***C***



The angle is smaller than a right angle ⇒ not obtuse

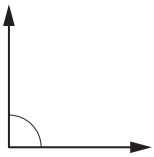


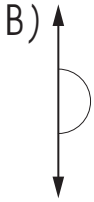
The angle is equal to a right angle ⇒ not obtuse

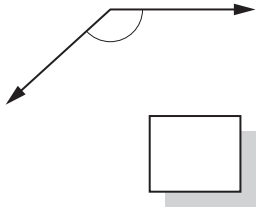


The angle is greater than a right angle ⇒ obtuse

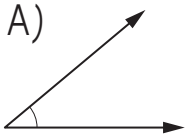
a) Which angle is a right angle?

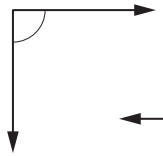
A) 

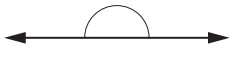
B) 

C) 

b) Which angle is a straight angle?

A) 

B) 

C) 

c) Draw an obtuse angle using this line.

d) Draw an acute angle using this line.

e) Draw a straight angle using this line.

f) Draw a right angle using this line.

Skill 16.10 Comparing the size of two angles.

- Compare the amount of turn needed to get from one straight line to another.
  Hint: The larger the amount of turn between the 2 straight lines, the larger the angle.
  The smaller the amount of turn between the 2 straight lines, the smaller the angle.

Q. The legs of which gymnast show the least angle?

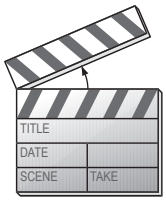
A) 

B) 

A. ***A***

The boy's legs show less than a half turn.
The girl's legs show a full half turn.

a) The arms of which clapboard show the greatest angle?

A) 

B) 

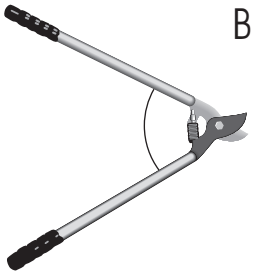
B

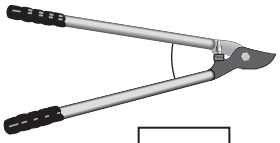
b) The hands on which clock show the least angle?

A) 

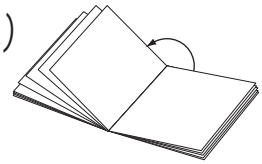
B) 

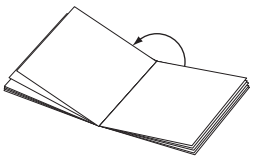
c) The arms of which cutter show the greatest angle?

A) 

B) 

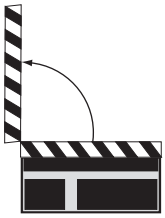
d) The open pages of which book show the least angle?

A) 

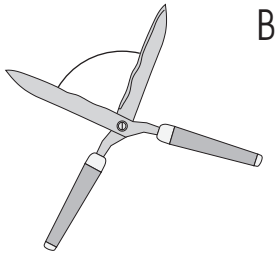
B) 

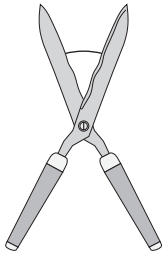
e) The arms of which clapboard are open closest to a right angle?

A) 

B) 

f) The blades of which shears are open closest to a right angle?

A) 

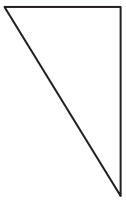
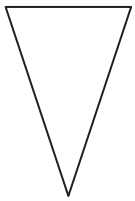
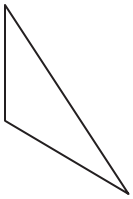
B) 

Skill 16.11 Recognising different types of triangles.

- Check the size of the angles in the triangle.

Angles	Triangle type
all acute angles	**acute-angled**
one right angle	**right-angled**
one obtuse angle	**obtuse-angled**

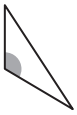
Q. Which triangle is an acute-angled triangle?

A)  B)  C) 

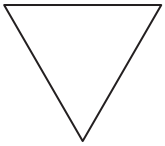
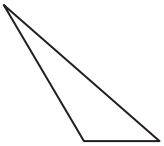
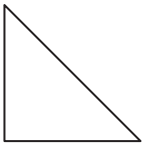
A. ***B***


One right angle
⇒ not an acute-angled triangle

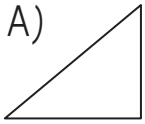
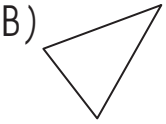
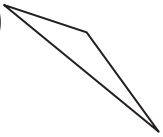

All acute angles
⇒ an acute-angled triangle


One obtuse angle
⇒ not an acute-angled triangle

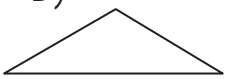
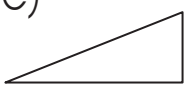
a) Which triangle is a right-angled triangle?

A)  B)  C) 

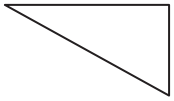
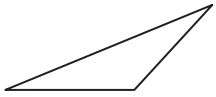
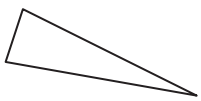
b) Which triangle is an obtuse-angled triangle?

A)  B)  C) 

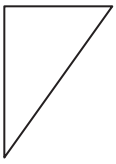
c) Which triangle is an acute-angled triangle?

A)  B)  C) 

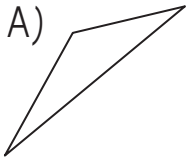
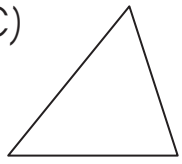
d) Which triangle is an obtuse-angled triangle?

A)  B)  C) 

e) Which triangle is a right-angled triangle?

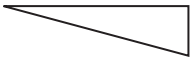
A)  B)  C) 

f) Which triangle is a right-angled triangle?

A)  B)  C) 

Skill 16.12 Recognising properties of triangles and quadrilaterals.

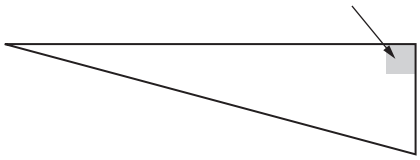
- Look for equal sides or equal angles.
- Look at the types of angles inside the triangle.
- Look at the types of lines inside the triangle or quadrilateral (parallel, perpendicular, symmetry).

Q. This triangle has: 

A) one line of symmetry
B) two parallel sides
C) all sides of equal length
D) one right angle

A. ***D***

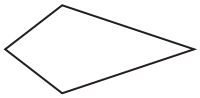
A, B and C are not true.
D is the correct answer, because the triangle has a right angle.



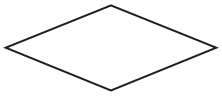
a) This square has: 

A) one obtuse angle
B) no line of symmetry
C) all sides of equal length
D) two acute angles

C

b) This kite has: 

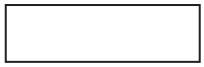
A) two parallel sides
B) one line of symmetry
C) two perpendicular sides
D) all sides of equal length

c) This rhombus has: 

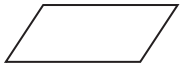
A) one right angle
B) two perpendicular sides
C) all angles of equal length
D) two lines of symmetry

d) This trapezium has: 

A) one line of symmetry
B) two perpendicular sides
C) two parallel sides
D) all sides of equal length

e) This rectangle has: 

A) opposite sides of equal length
B) one obtuse angle
C) two acute angles
D) four lines of symmetry

f) This parallelogram has: 

A) two perpendicular sides
B) one line of symmetry
C) opposite sides parallel
D) one right angle