Grade 7 Exam Paper November
ATP Based on Term 3 and Term 4 Work

Name: _____ Date: _____

Class: _____ Total: _____ / 100

Time: 2 Hours

Instructions

1. Answer all the questions as neatly as you can.
2. Try your best.
3. Use a ruler.
4. Read each question carefully.

Question 1 (9 marks)

1. Given the expression: $3x^4 + 5x^3 - 8x^2 - 9x + 10$

   a) What variable is used in the expression? (1)

   _____

   b) What is the constant?

   _____

2. Write this story sum in algebraic language: (2)
   A number is added to another number to give the sum of 32.

   _____

3. How many variables are in each of these expressions? List each variable.
   a) $4m + 2n = 10$ (2)

   _____

   b) $3x - 7y + 4z = 40$ (3)

   _____

   _____

Question 2 (9 marks)

1. Find the value of $\square$ in each of the following equations:

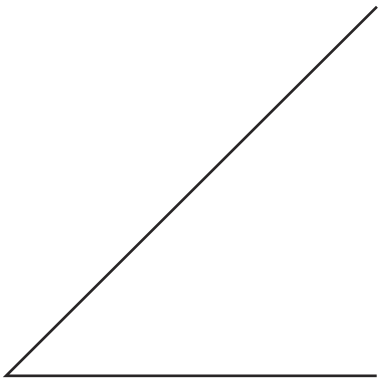
a) $3 \times \square + 7 = 13$ (3)

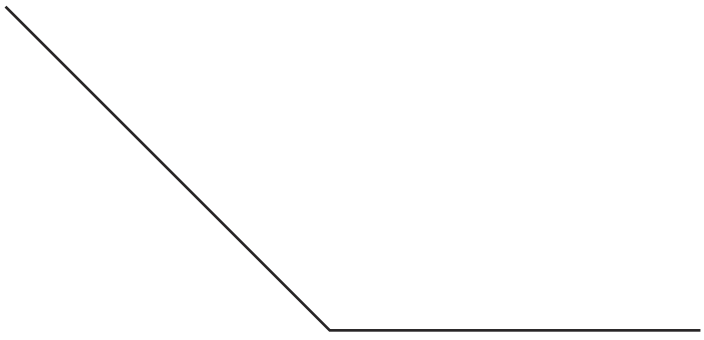
b) $\frac{\square}{5} + 10 = 14$ (3)

c) $\square \times \square = 36$ (3)

Question 3 (9 marks)

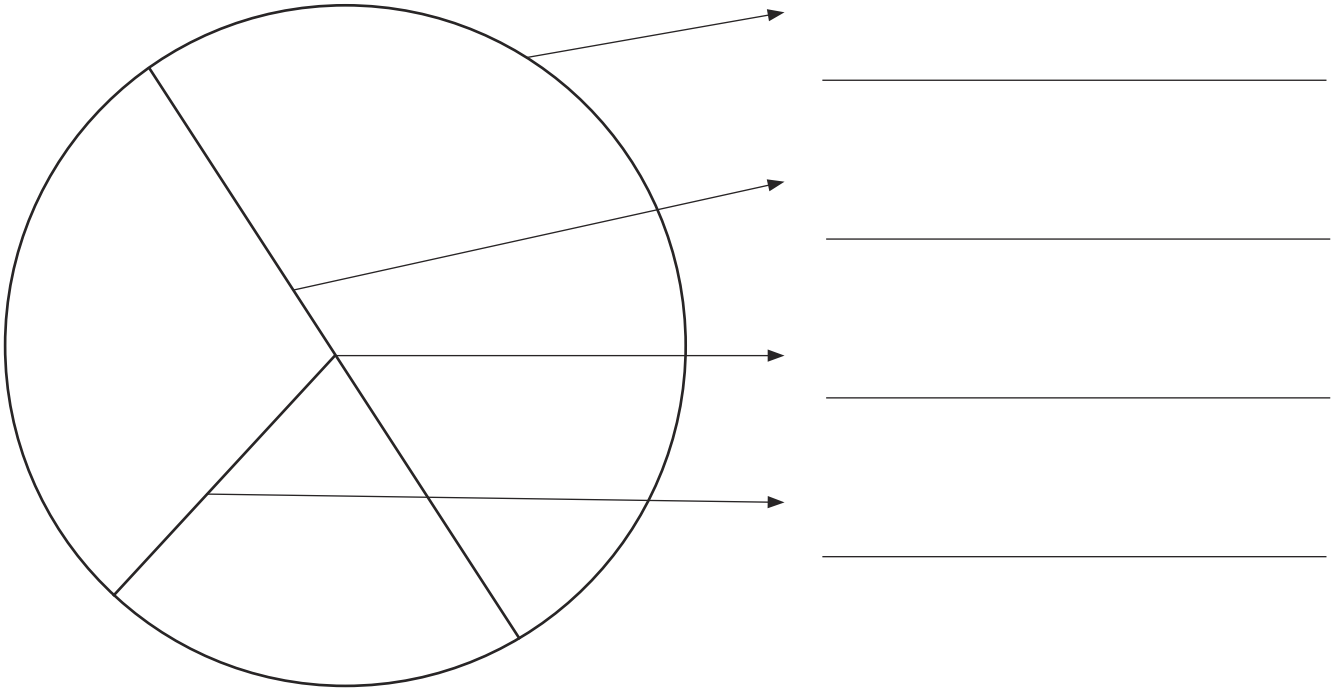
1. Name each of these angles: (2)





2. Construct parallel lines: (3)

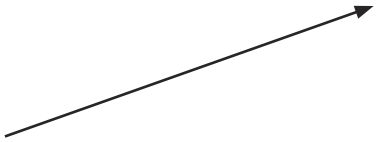
3. Name these parts of the circle: (4)



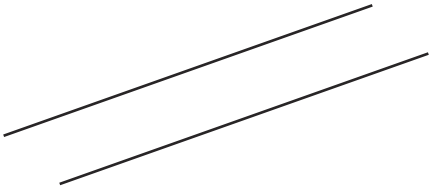
Question 4 (4 marks)

1. Name each of these:

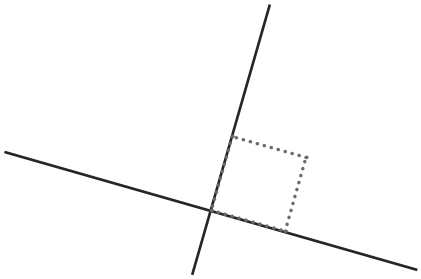
a)



b)



c)



d)

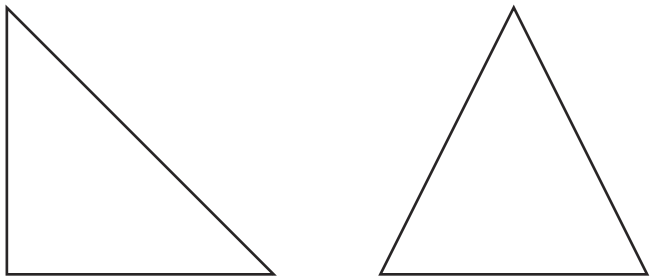
Question 5 (14 marks)

1. Match the description in column A with the name of the 2D shape in column B. (6)

Column A	Column B	Match from Column A
1. The line the width of the circle going through the centre	Square	
2. A triangle where all three sides are equal	Rectangle	
3. A four-sided shape where all four sides are equal	Equilateral triangle	
4. A triangle where two sides are equal	Congruent	
5. A four-sided shape where the opposite sides are equal	Isosceles triangle	
6. When two shapes are the same size and shape	Diameter	

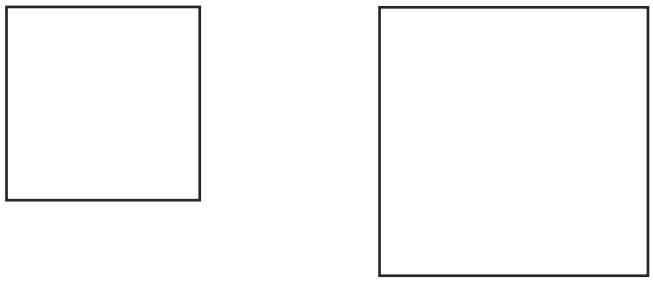
2. Say whether these shapes are similar, congruent, or neither: (3)

a)



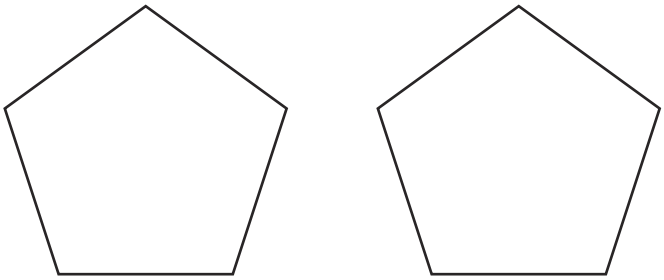
_____

b)



_____

c)

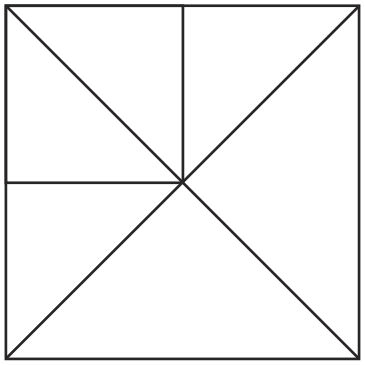


_____

3. Use your knowledge of shapes to solve these problems:

a) An equilateral triangle has a perimeter of 18 cm.
What is the length of each side? (3)

b) How many triangles are in this picture? (2)

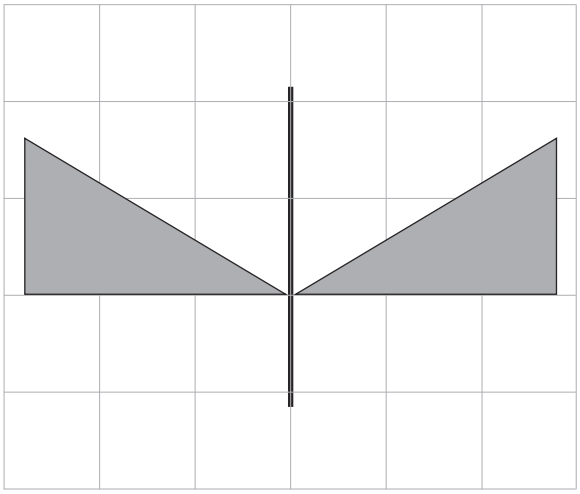


Question 6 (14 marks)

1. Name the transformation in each of these images: (4)

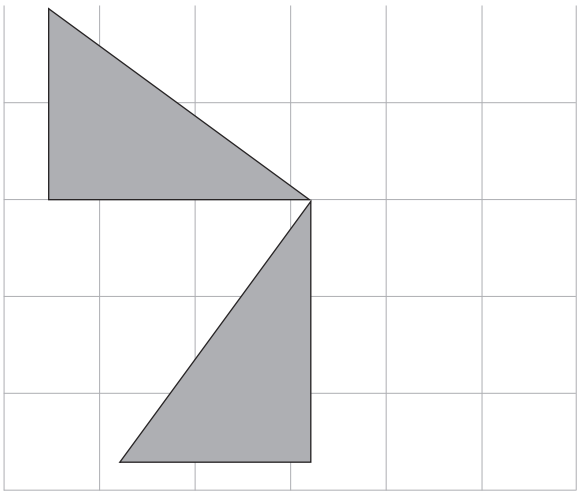
a)

b)

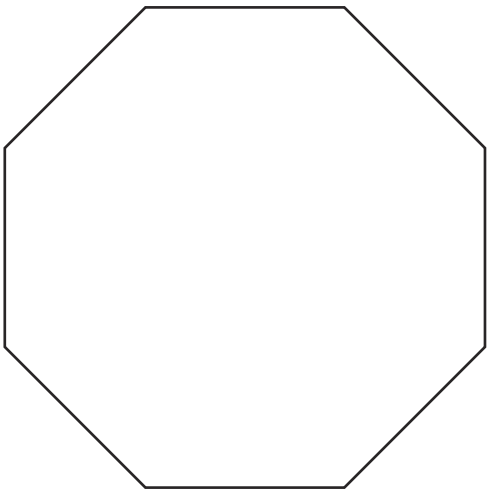


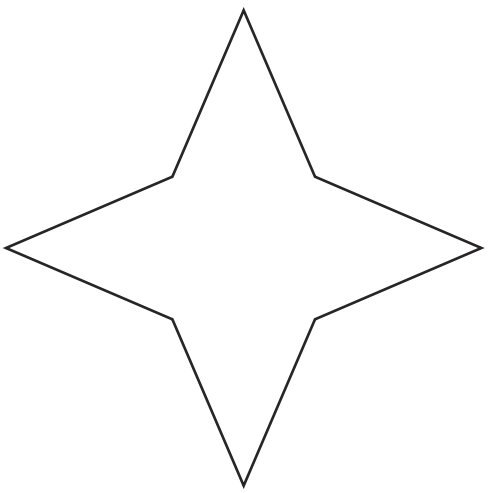
c)

d)



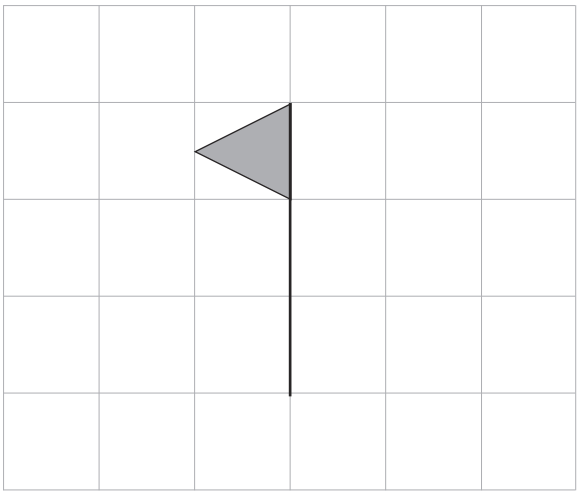
2. Draw in the lines of symmetry for these shapes: (2)



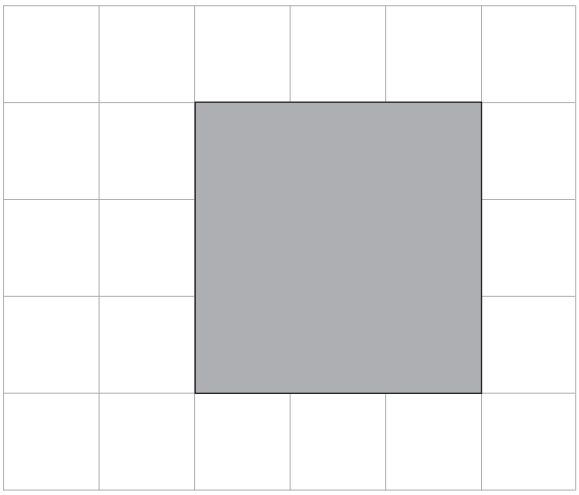


3. Using the grids given below, draw in the following transformations: (4)

a) Rotate the flag below by 90° clockwise:



b) Reduce the shape by a factor of 3:



Answer these questions about symmetry:

a) How many lines of symmetry does a square have? (1)

_____

b) How many lines of symmetry does a scalene triangle have? (1)

_____

c) A rectangular pizza with length 20 cm and breadth 30 cm is reduced by a factor of 2. What is the new area of the pizza? (2)

_____

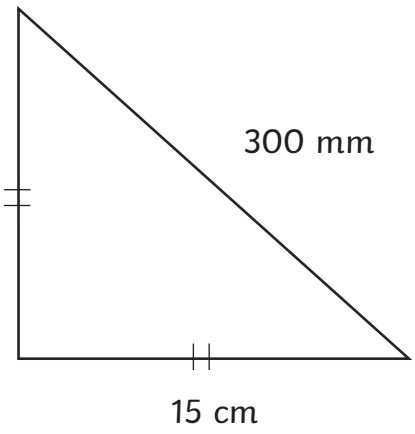
_____

Question 7 (13 marks)

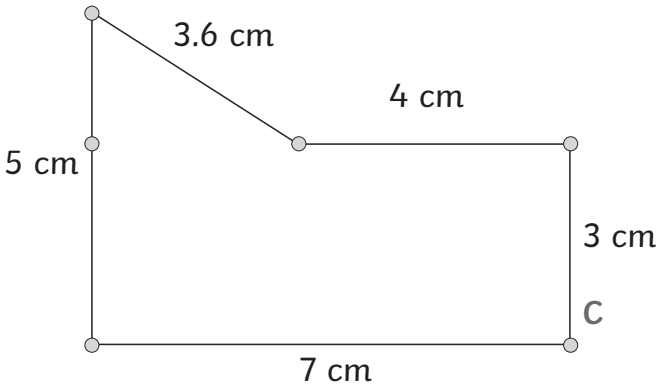
1. What is the perimeter and area of these shapes? Remember to show your formula. (8)

a)

b)



2. Examine this shape carefully and calculate the area and perimeter for it. (5)



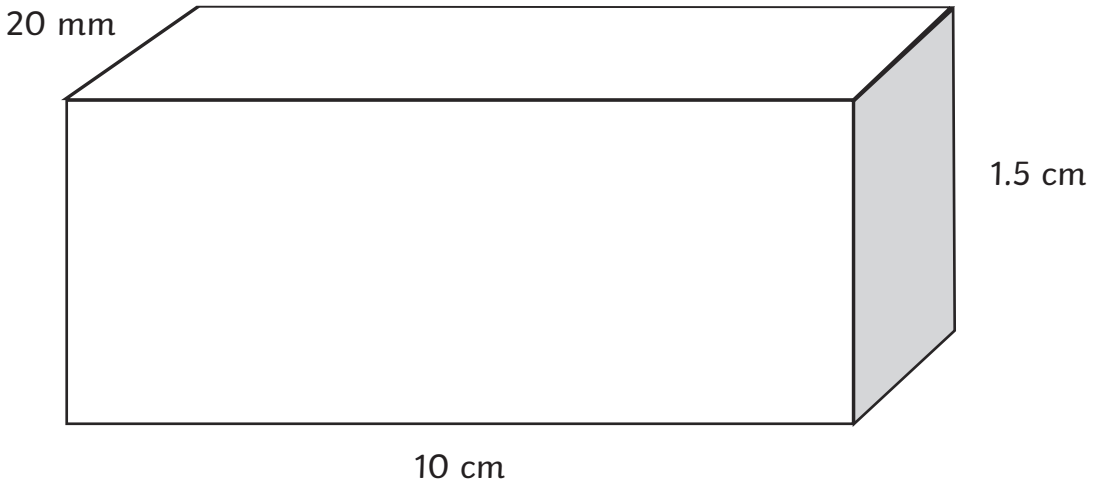
Question 8 (14 marks)

1. What is the difference between a cube and a rectangular prism? (6)

_____

_____

2. Look at the following rectangular prism carefully before answering the questions that follow:



a) Find the surface area for the rectangular prism. (3)

b) Find the volume of the rectangular prism in mm^2. (4)

c) If 1 ml of water is equal to 1 cm^3, how many millilitres of water can fit into the rectangular prism? (3)

3. We are given a cubic box with sides all equal to 17 cm. We are then asked to pack as any cubic die with sides 1.2 cm into this box. In theory, how many die should fit into the box? Show all your calculations. (3)

Question 9 (14 marks)

1. The table below shows the number of apples that fell off a tree over a 15-day period.

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Number of apples	18	10	16	4	12	19	15	11	19	16	5	14	19	7	9

a) Arrange the number of apples in ascending order: (1)

b) What is the mode? (1)

c) What is the median of the data given? (1)

d) What is the range? (1)

e) Calculate the mean: (3)

2. Jimmy sits outside his house and writes down the colour of each car that passes him in a 2-hour period. Here are his results:

grey	white	grey	black	blue	black
grey	black	red	white	green	white
white	green	red	grey	blue	black

a) Complete this tally and frequency table for the colours of cars Jimmy saw. (3)

Colour of Car	Tally	Frequency
Red		
White		
Blue		
Green		
Grey		
Black		

b) Using the frequency table above, draw a bar graph of the information. (3)

Grade 7 Exam Paper November - ANSWERS
ATP Based on Term 3 and Term 4 Work

Name: _____ Date: _____

Class: _____ Total: _____ / 100

Time: 2 Hours

Instructions

1. Answer all the questions as neatly as you can.
2. Try your best.
3. Use a ruler.
4. Read each question carefully.

Question 1 (9 marks)

1. Given the expression: $3x^4 + 5x^3 - 8x^2 - 9x + 10$

   a) What variable is used in the expression? (1)

   X

   b) What is the constant?

   10

2. Write this story sum in algebraic language: (2)
   A number is added to another number to give the sum of 32.

   x + y =32

3. How many variables are in each of these expressions? List each variable.

   a) $4m + 2n = 10$ (2)

   2 variables, m and n

   b) $3x - 7y + 4z = 40$ (3)

   3 variables, x, y and z

Question 2 (9 marks)

1. Find the value of $\square$ in each of the following equations:

a) $3 \times \square + 7 = 13$ (3)

$3 \times \square + 7 = 6 + 7$ (1 mark)

$3 \times \square + 7 = 3 \times 2 + 7$ (1 mark)

$\square = 2$ (1 mark)

b) $\frac{\square}{5} + 10 = 14$ (3)

$\frac{\square}{5} + 10 = 4 + 10$ (1 mark)

$\frac{\square}{5} + 10 = \frac{20}{5} + 10$ (1 mark)

$\square = 20$ (1 mark)

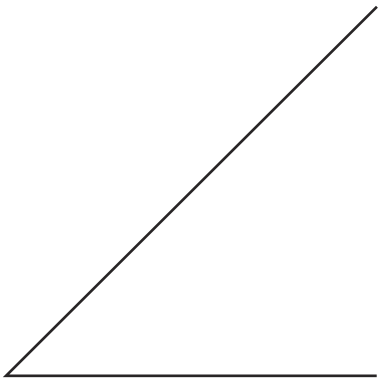
c) $\square \times \square = 36$ (3)

$\square \times \square = 6 \times 6$ (2 marks)

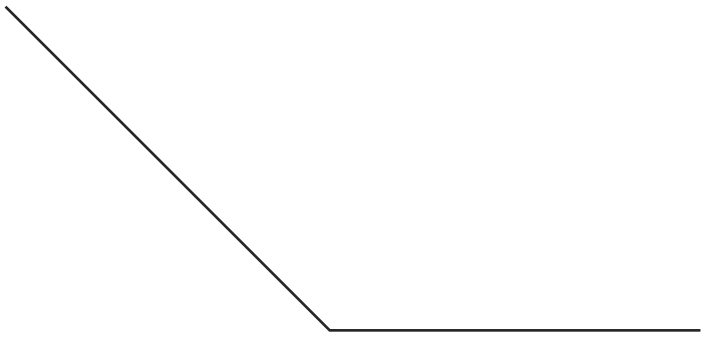
$\square = 6$ (1 mark)

Question 3 (9 marks)

1. Name each of these angles: (2)



Acute angle

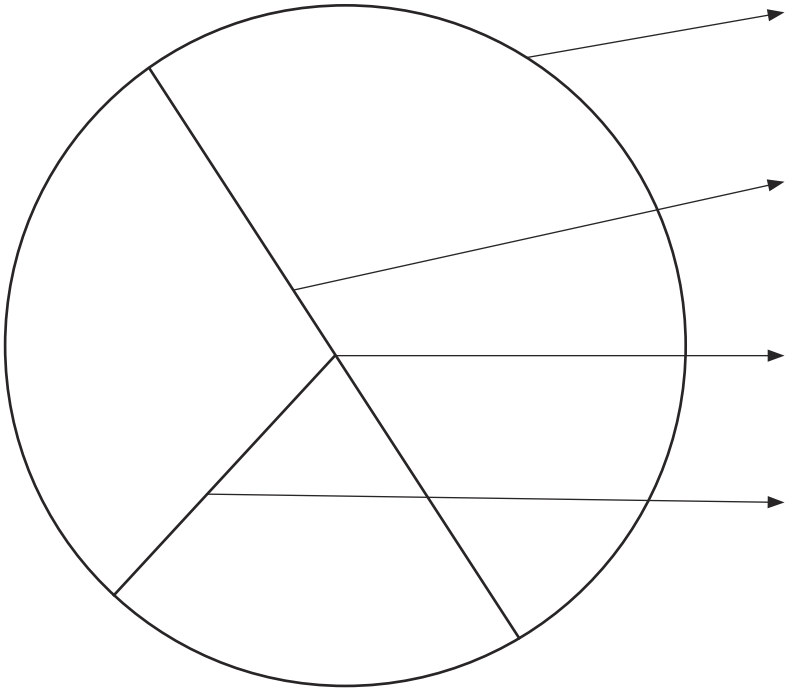


Obtuse angle

2. Construct parallel lines: (3)

   Marks should be given based on the fact that the lines are parallel and equidistant from each other. Neatness and accuracy should also be considered.

3. Name these parts of the circle: (4)



circumference

diameter

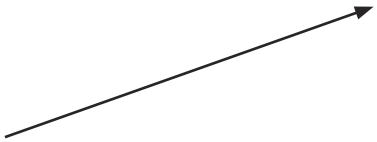
centre

radius

Question 4 (4 marks)

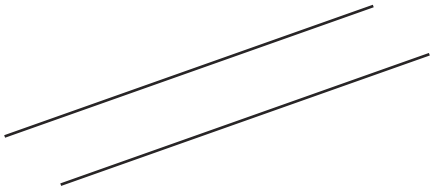
1. Name each of these:

a)



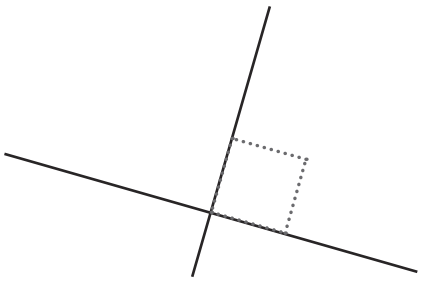
ray

b)



parallel lines

c)



perpendicular lines

d)

line segment

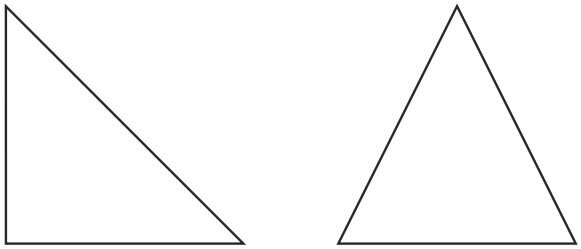
Question 5 (14 marks)

1. Match the description in column A with the name of the 2D shape in column B. (6)

Column A	Column B	Match from Column A
1. The line the width of the circle going through the centre	Square	3
2. A triangle where all three sides are equal	Rectangle	5
3. A four-sided shape where all four sides are equal	Equilateral triangle	2
4. A triangle where two sides are equal	Congruent	6
5. A four-sided shape where the opposite sides are equal	Isosceles triangle	4
6. When two shapes are the same size and shape	Diameter	1

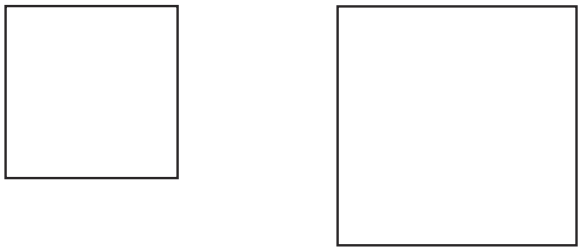
2. Say whether these shapes are similar, congruent, or neither: (3)

a)



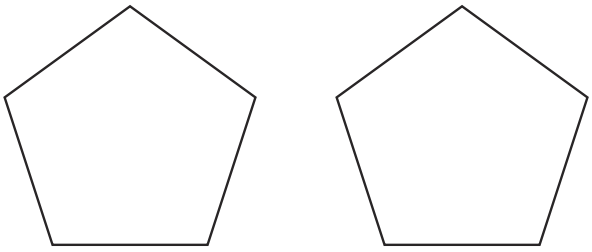
neither

b)



similar

c)



congruent

Use your knowledge of shapes to solve these problems:

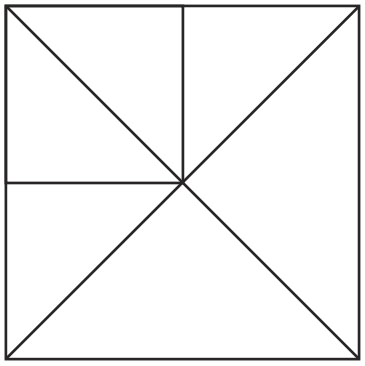
a) An equilateral triangle has a perimeter of 18 cm. What is the length of each side? (3)

An equilateral triangle has 3 equal sides so

1 side = 18 cm ÷ 3

1 side = 6 cm

b) How many triangles are in this picture? (2)



12 triangles

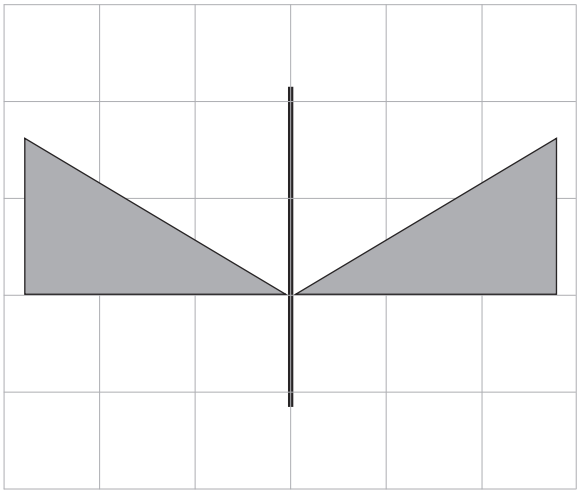
Question 6 (14 marks)

1. Name the transformation in each of these images: (4)

a)

translation

b)

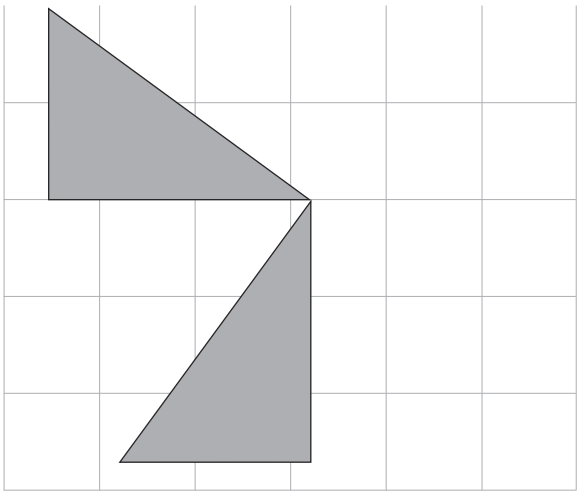


reflection

c)

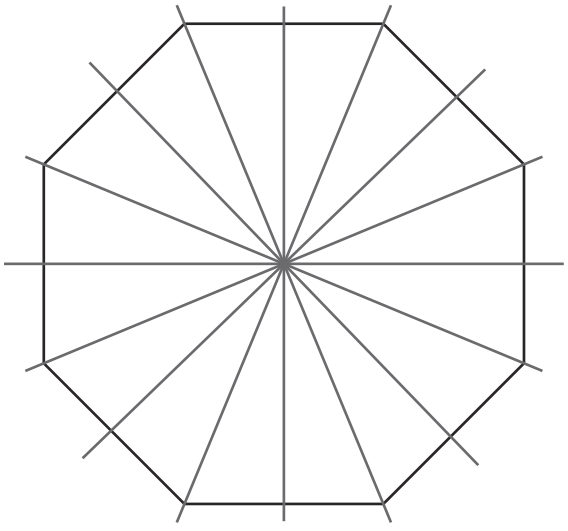
enlargement

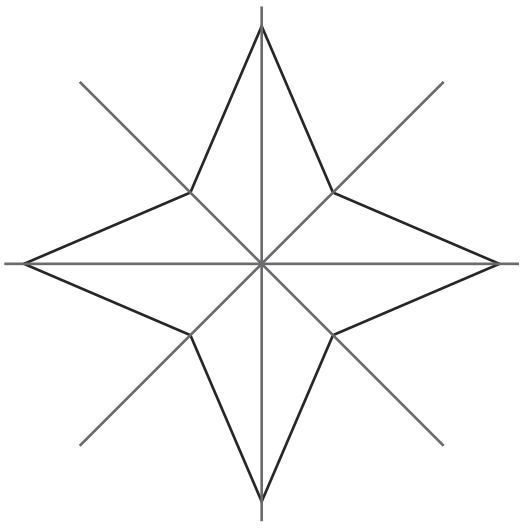
d)



rotation

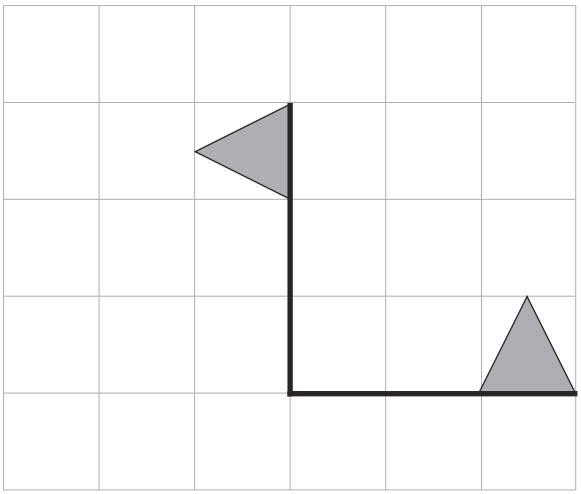
2. Draw in the lines of symmetry for these shapes: (2)



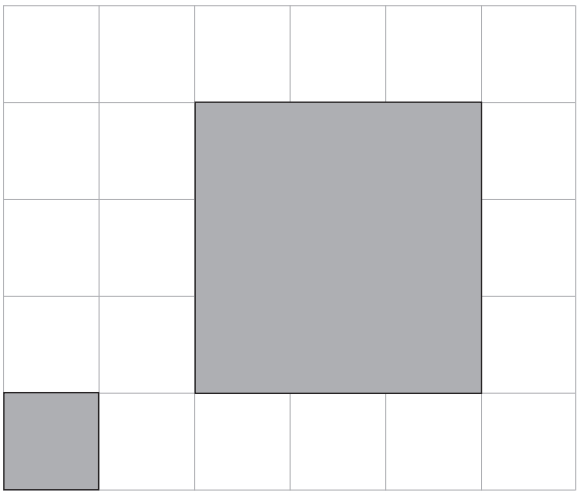


3. Using the grids given below, draw in the following transformations: (4)

a) Rotate the flag below by 90° clockwise:



b) Reduce the shape by a factor of 3:



Answer these questions about symmetry:

a) How many lines of symmetry does a square have? (1)

4 Lines of symmetry

b) How many lines of symmetry does a scalene triangle have? (1)

None

c) A rectangular pizza with length 20 cm and breadth 30 cm is reduced by a factor of 2. What is the new area of the pizza? (2)

New area = 10 cm x 15 cm (1 mark)

New area = 150 cm^2 (1 mark)

Question 7 (13 marks)

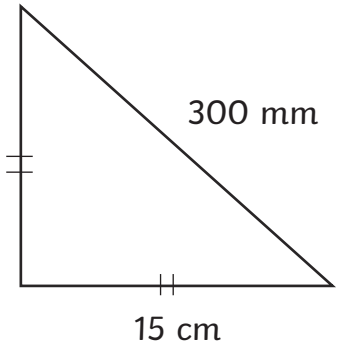
1. What is the perimeter and area of these shapes? Remember to show your formula. (8)

a)

Perimeter = 14cm x 2 + 5cm x 2
= 28 cm + 10 cm
= 38 cm

Area = length x breadth
= 14 cm x 5 cm
= 70 cm^2

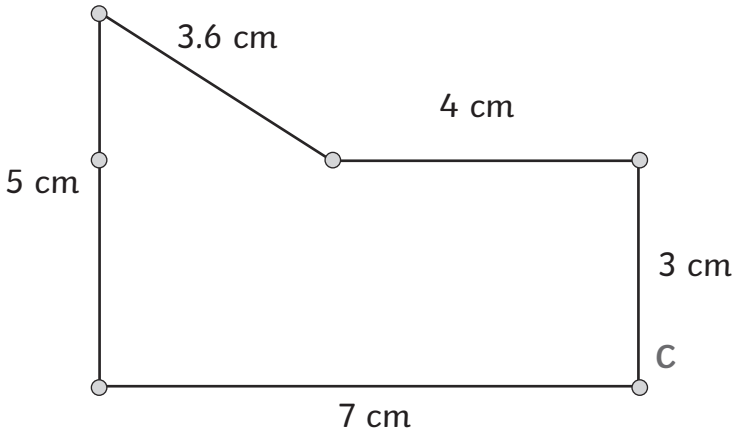
b)



Perimeter = 30 cm + 15 cm + 15 cm
= 30 cm + 30 cm
= 60 cm

Area = $\frac{1}{2}$ x base x ⊥ height
= $\frac{1}{2}$ x 15 cm x 15 cm
= $\frac{1}{2}$ x 225 cm^2
= 112.5 cm^2

2. Examine this shape carefully and calculate the area and perimeter for it. (5)



Perimeter = 5 cm + 7 cm + 3 cm + 4 cm + 3.6 cm (1 mark)

= 22.6 cm (1 mark)

Area = Area of rectangle + area of triangle

= length x breadth + $\frac{1}{2}$ x base x ⊥height (1 mark)

= 7 cm x 3 cm + $\frac{1}{2}$ x 2 cm x 3 cm (1 mark)

= 21 cm^2 + 3cm^2

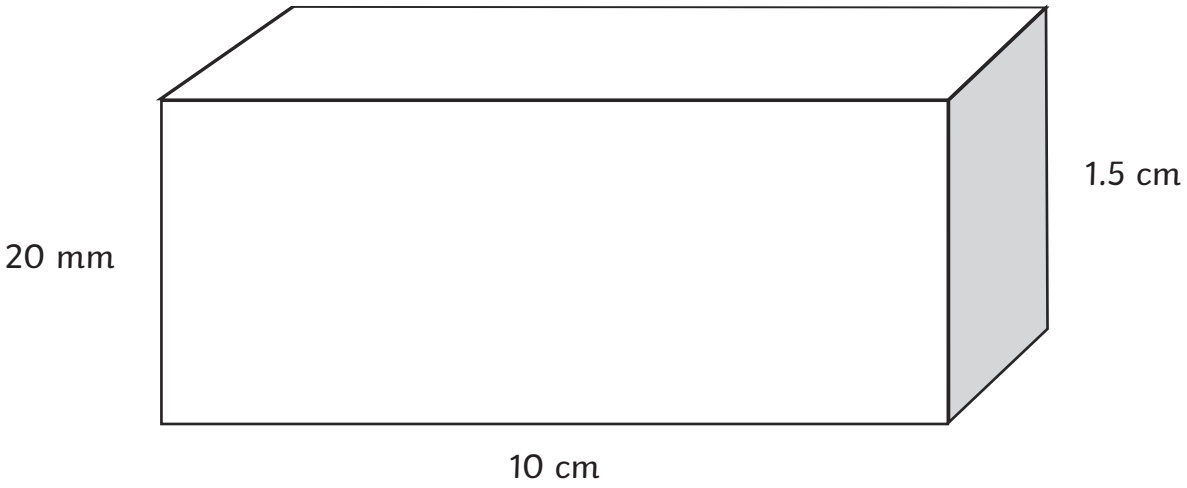
= 24 cm^2

Question 8 (14 marks)

1. What is the difference between a cube and a rectangular prism? (6)

   A cube has all three sides (length, breadth, and height) equal but a rectangular prism doesn't.

2. Look at the following rectangular prism carefully before answering the questions that follow:



a) Find the surface area for the rectangular prism. (3)

SA = 2 x length x breadth + 2 x length x height + 2 x breadth x height
SA = 2 x 10 cm x 2 cm + 2 x 10 cm x 1.5 cm + 2 x 2 cm x 1.5 cm

SA = 40 cm^2 + 30 cm^2 + 6 cm^2

SA = 76 cm^2

b) Find the volume of the rectangular prism in mm^2. (4)

Volume = length x breadth x height

Volume = 10 cm x 2 cm x 1.5 cm

Volume = 30 cm^3

c) If 1 ml of water is equal to 1 cm^3, how many millilitres of water can fit into the rectangular prism? (3)

Volume = 30 cm^3 ÷ 1 cm^3

Volume = 30ml

3. We are given a cubic box with sides all equal to 17 cm. We are then asked to pack as any cubic die with sides 1.2 cm into this box. In theory, how many die should fit into the box? Show all your calculations. (3)

Volume of box = length x length x length

= 17 cm x 17 cm x 17 cm

= 4 913 cm^3

Volume of 1 dice = 1.2 cm x 1.2 cm x 1.2 cm

= 1.728 cm^3

We can fit 4 913 ÷ 1.728 = 2 843 die into the cubic box.

Question 9 (14 marks)

The table below shows the number of apples that fell off a tree over a 15-day period.

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Number of apples	18	10	16	4	12	19	15	11	19	16	5	14	19	7	9

a) Arrange the number of apples in ascending order: (1)

4, 5, 7, 9, 10, 11, 12, 14, 15, 16, 16, 18, 19, 19, 19

b) What is the mode? (1)

19

c) What is the median of the data given? (1)

14

d) What is the range? (1)

range = 19 – 4

range = 15

e) Calculate the mean: (3)

mean = Sum of all values ÷ number of values

mean = (4 + 5 +7 + 9 + 10 + 11 + 12 + 14 +15 + 16 + 16 + 18 + 19 + 19 + 19) ÷ 15

mean = 194 ÷ 15

mean = 12.93

2. Jimmy sits outside his house and writes down the colour of each car that passes him in a 2-hour period. Here are his results:

grey	white	grey	black	blue	black
grey	black	red	white	green	white
white	green	red	grey	blue	black

a) Complete this tally and frequency table for the colours of cars Jimmy saw. (3)

Colour of Car	Tally	Frequency
Red	II	2
White	IIII	4
Blue	II	2
Green	II	2
Grey	IIII	4
Black	IIII	4

b) Using the frequency table above, draw a bar graph of the information. (3)