

**Mathematics Entrance
Examination 2018**

1 Hour



Name: _____

Try to answer as many questions as possible.
Write the **answers** in the spaces provided and
do not rub out any working.
If you get stuck on a question leave it and come
back to it later if you have time.

1 a) Calculate the sum of $\frac{1}{2}$, $\frac{1}{5}$ and $\frac{3}{4}$

.....
.....
..... (1)

b) Divide **0.1** by **100**

.....
.....
..... (1)

c) Multiply **30** by **3.9**

.....
.....
..... (1)

d) Calculate **99%** of **200**

.....
.....
..... (1)

e) Divide **645** by **43**

.....
.....
..... (2)

f) Calculate the answer to $9^2 - 36 \div 9$

.....
.....
..... (1)

2 a) Multiply **5413** by **86**

.....
.....
.....
..... (2)

b) Divide **8827** by **97**

.....
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.....
..... (2)

c) Calculate **28%** of **650**

.....
.....
..... (1)

d) Calculate the sum of $1\frac{1}{15}$ and $\frac{2}{5}$

.....
.....
..... (1)

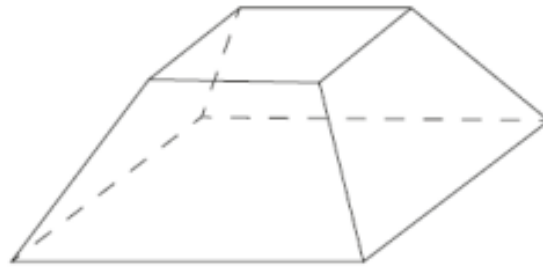
e) Divide $\frac{1}{4}$ by 2

.....
.....
..... (1)

f) Calculate the difference between $4\frac{2}{3}$ and $1\frac{6}{7}$

.....
.....
..... (1)

3 Here are is a drawing of a 3-D shape. Complete the table.



Number of faces	Number of vertices	Number of edges

.....
 (2)

4 Here are the temperatures in four cities at midnight and at midday.

	Temperature	
City	At midnight	At midday
Paris	-4°C	-2°C
Oslo	-13°C	-7°C
Rome	3°C	10°C
Warsaw	-6°C	2°C

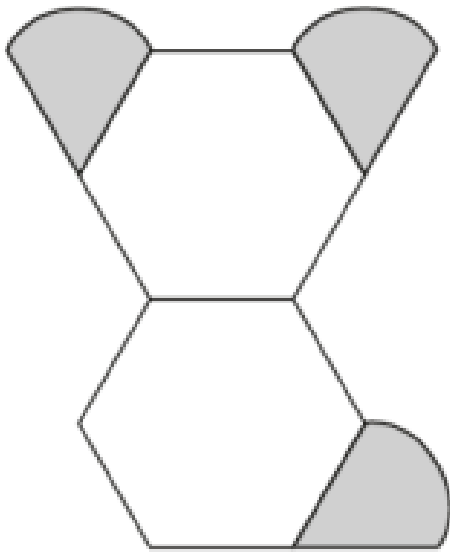
a) At midnight, how many degrees colder was Paris than Rome?

.....
 (1)

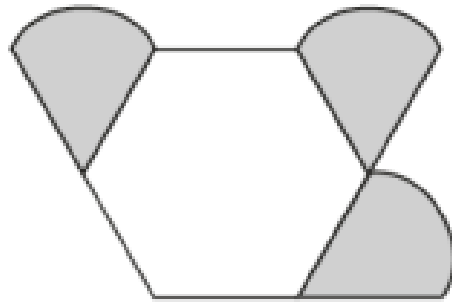
b) Which city was 6 degrees colder at midnight than at midday?

.....
 (1)

- 5 Amina is making designs with two different shapes. She gives each shape a value.

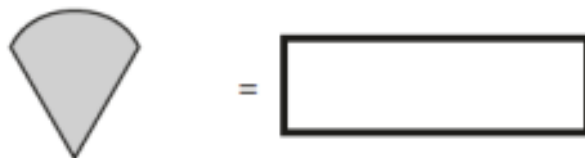
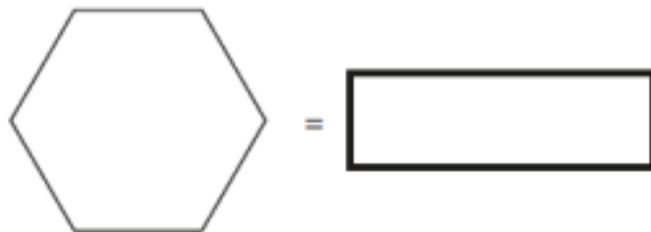


Total value is 147



Total value is 111

Calculate the value of each shape.



.....

(2)

6 The list below shows the years in which the Cricket World Cup was held since 1992:

1992, 1996, 1999, 2003, 2007, 2011, 2015

Adam says,



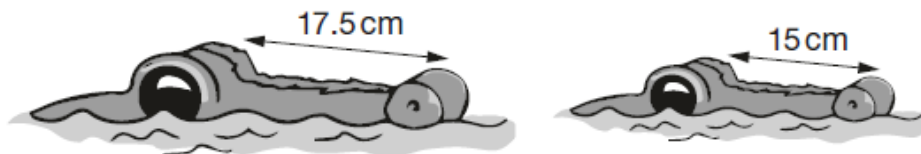
Adam is **not** correct. Explain how you know.

.....
.....
..... (1)

7 The length of an alligator can be estimated by:

- measuring the distance from its eyes to its nose
- then multiplying that distance by 12

What is the difference in the estimated lengths of these two alligators?



Not to scale

.....
.....
.....
..... (2)

8 Layla wants to estimate the answer to this calculation.

$$3\frac{9}{10} - 2\frac{1}{8} + 1\frac{4}{5}$$

Tick the calculation below that is the best estimate.

Tick **one**.

$3 - 2 + 2$

$4 - 2 + 2$

$4 - 2 + 1$

$3 - 2 + 1$

.....
..... (1)

9 Last year, Jacob went to four concerts.

Three of his tickets cost £5 each.



The other ticket cost £7.



What was the **mean** cost of the tickets?

.....
.....
.....
..... (2)

10

$$\frac{6}{5} \quad \frac{3}{5} \quad \frac{3}{4}$$

Write these fractions in order, starting with the smallest.



smallest



.....
..... (1)

11



Write the correct symbol in each box to make the statements correct.

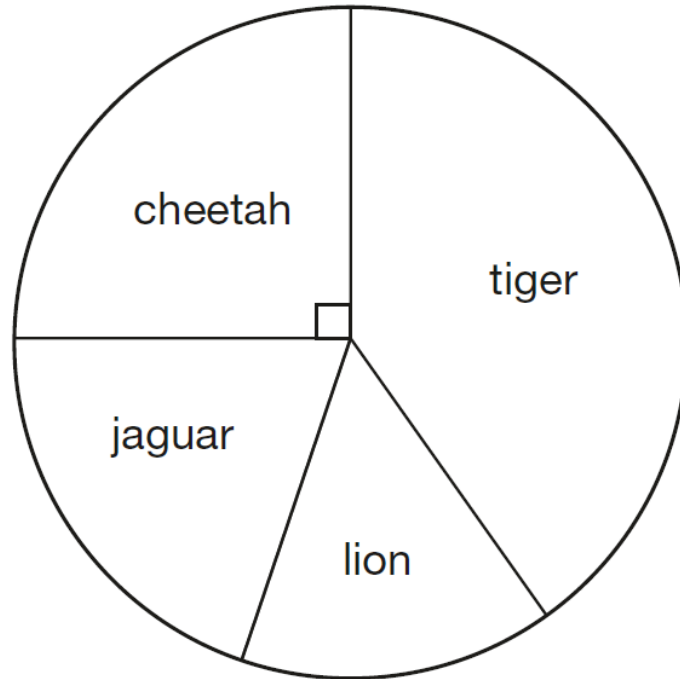
11×12 15×10 $120 \div 4$ $160 \div 8$

$90 \div 30$ $60 \div 20$ 30×8 100×10

.....
.....
.....
..... (2)

12 This chart shows the number of different types of big cat in a zoo.

There are 20 big cats in the zoo altogether.



Here are some statements about the chart.

Tick the statement(s) that are **true**.

There are more cheetahs than jaguars.

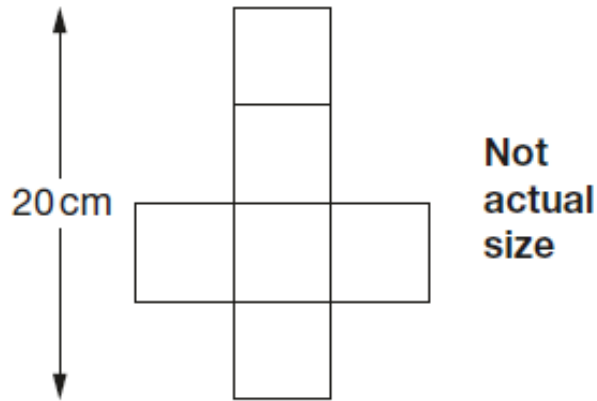
The total number of lions and tigers is 10

One-quarter of the big cats are cheetahs.

There are more than 5 jaguars.

.....
.....
.....
..... (2)

13 This is the net of a cube.



What is the **volume** of the cube?

cm ³

.....
..... (1)

14 Jack has £400

He spends 35% of his money on a new bike.

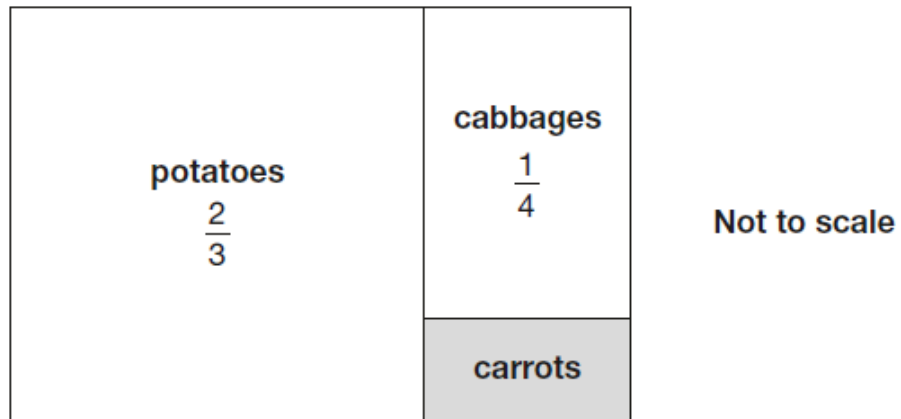


How much does Jack spend on his new bike?

.....
.....
..... (1)

15 This is a diagram of a vegetable garden.

It shows the fractions of the garden planted with potatoes and cabbages.

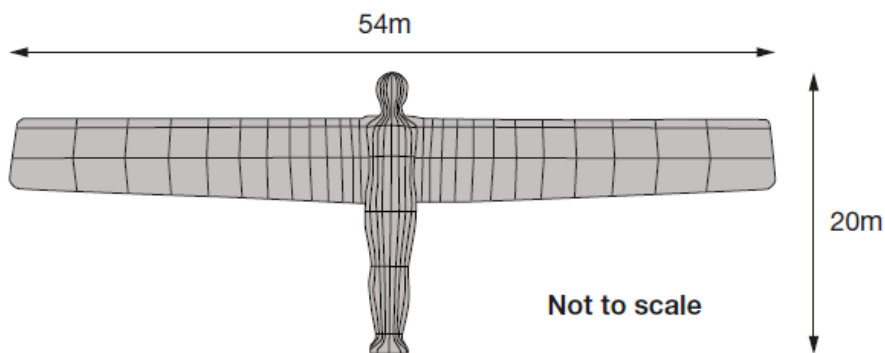


The remaining area is planted with carrots.

What **fraction** of the garden is planted with carrots?

.....
.....
.....
..... (2)

16 The Angel of the North is a large statue in England. It is 20 metres tall and 54 metres wide.



Ally makes a scale model of the Angel of the North.

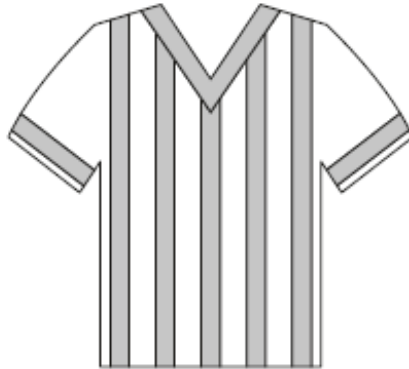
Her model is 40 centimetres tall.

How **wide** is her model?

cm

.....
..... (1)

17 Adam chooses the colours for a new team shirt. The shirt has two colours.



There are four colours to choose from: **yellow, blue, white** and **red**.

Write the **two** missing combinations.

The shirt could be:

- yellow and blue
- yellow and white
- yellow and red
- blue and white.

_____ and _____

_____ and _____

.....
..... (1)

18 This table shows the areas of the United Kingdom and Jamaica.

Country	Area (square kilometres)
United Kingdom	240,000
Jamaica	10,000

The area of the United Kingdom is larger than the area of Jamaica.

How many times larger is the United Kingdom?

.....
.....
..... (1)

19

$$33,630 = 354 \times 95$$

Use this multiplication to complete the calculations below.

$$354 \times 9.5 = \boxed{}$$

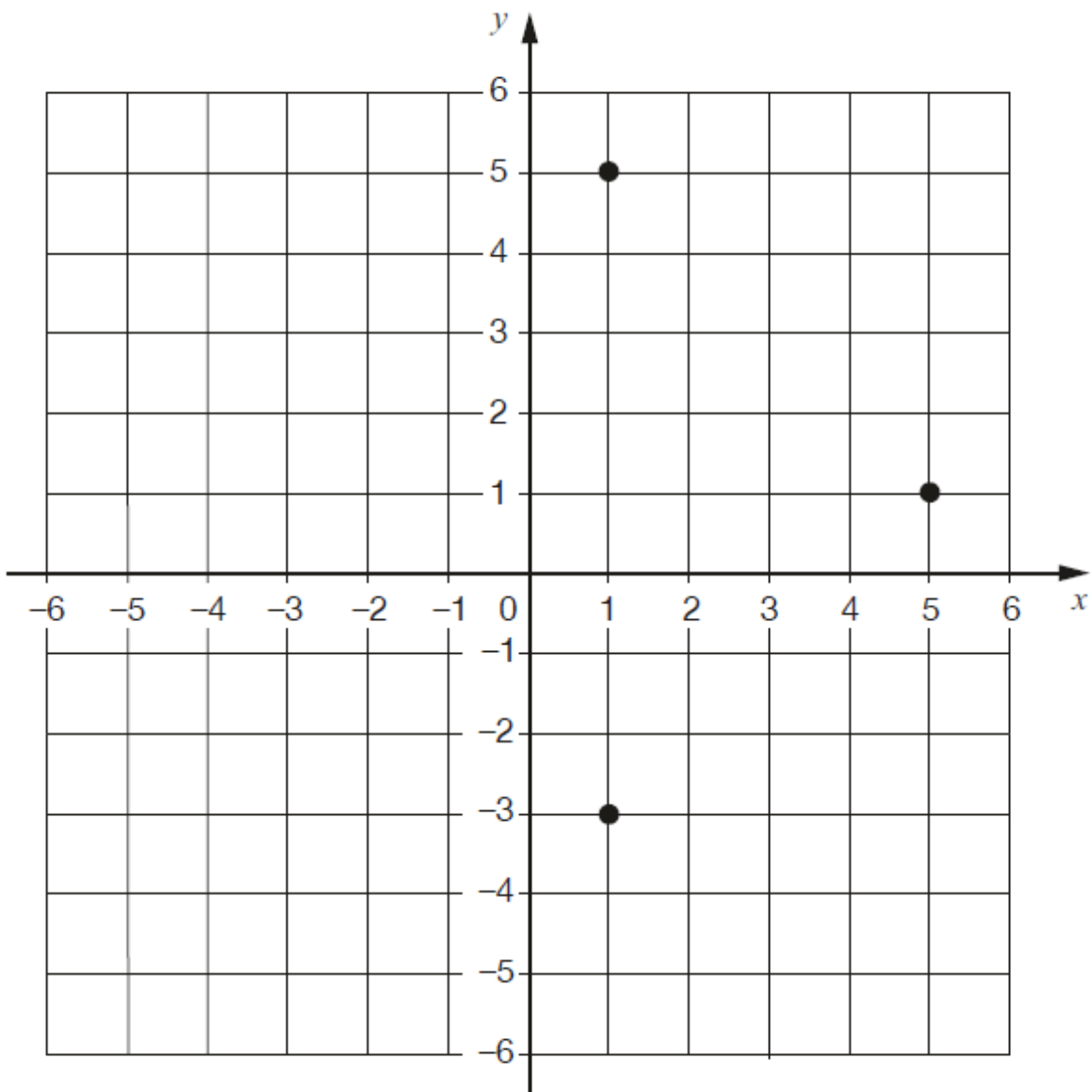
$$3,540 \times 95 = \boxed{}$$

$$3,363 \div 95 = \boxed{}$$

.....
.....
.....
..... (2)

20 Layla draws a square on this coordinate grid.

Three of the vertices are marked.



What are the coordinates of the missing vertex?

(,)

.....
..... (1)

21 Jack finished a sponsored run in 53 minutes 25 seconds. Ally finished 3 minutes 50 seconds **after** Jack.

How long did Ally take?

min	sec
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.....
..... (1)

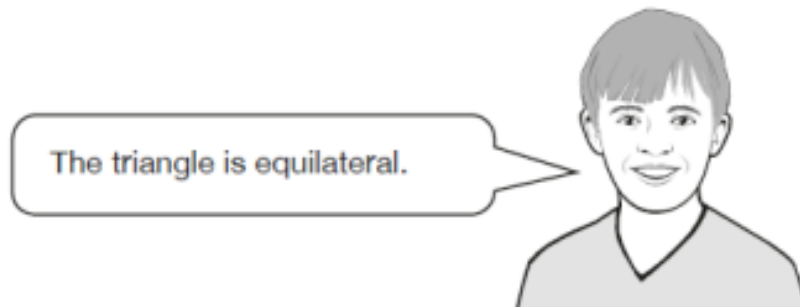
Layla finished the run 8 minutes 45 seconds **before** Jack.

min	sec
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.....
..... (1)

22 Two of the angles in a triangle are 70° and 40° .

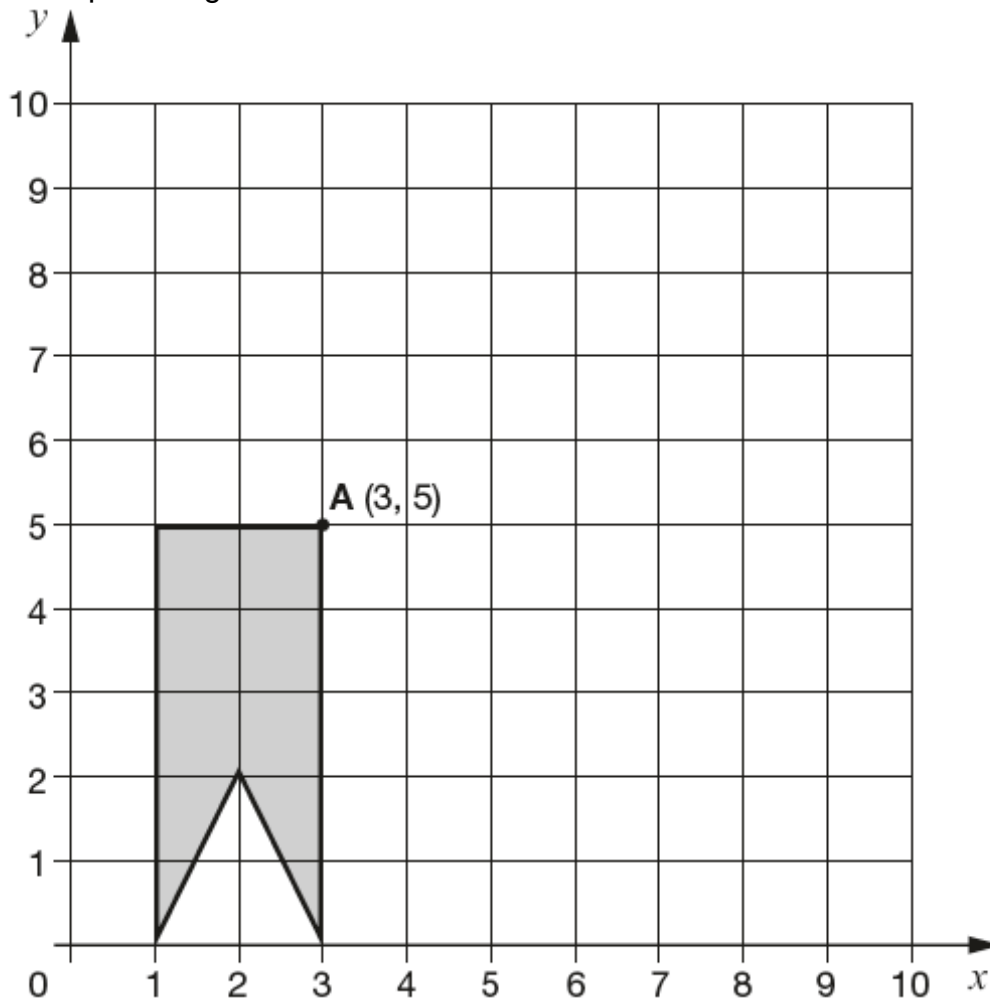
Jack says,



Explain why Jack is **not** correct.

.....
.....
.....
..... (1)

23 Here is a shape on a grid.

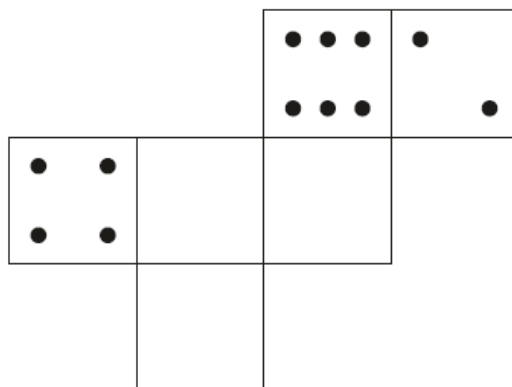


The shape is translated so that point **A** moves to (7, 8)..

Draw the shape in its new position.

.....
 (1)

24 On a dice, the sum of the dots on opposite faces is always 7. Draw dots on the three empty faces of the net so that it could fold up to make a dice.



.....
 (1)

25 A shop prints designs on T-shirts.



They use this formula to work out the price for printing a design.

$$\text{price} = 60\text{p} \times \text{number of colours} + \text{£}1.25$$

What is the price for printing a design that has 3 colours in it?

£

.....
..... (1)

Amina has £5 to spend on printing a design.

What is the greatest number of colours she can have in the design?

.....
.....
.....
.....
..... (2)