

# 11+ Independent Style Mathematics Paper 1

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# 11+ Independent Style Mathematics Paper 1

**Instructions:**

- You have 1 hour to complete this paper.
- Write your workings out wherever necessary in the space provided below each question.
- Write your answers on the question paper itself in the space provided.
- If you have written the wrong answer, erase it or cross it out and write the new one. Make sure your final answer is clear.
- Answer as many questions as possible. No marks are lost for an incorrect answer.
- The number of marks each question is worth is written under the question.

**Information about the exam paper:**

- The page number is in the top right corner of each page.

**Your time starts when you turn the page.**

**You have 1 hour to complete this exam.**

**Question 1**

Work out:

a)  $(5 - 2)^2 + 3 =$

Answer \_\_\_\_\_

[1 mark]

b)  $24 \div (7 - 5)^2 =$

Answer \_\_\_\_\_

[1 mark]

c)  $(20 + 16) \div 3^2 =$

Answer \_\_\_\_\_

[1 mark]

d)  $(5 \times 6) \div (4 - 7) =$

Answer \_\_\_\_\_

[2 marks]

**Question 2**

a) List the prime numbers between 30 and 50

Answer \_\_\_\_\_  
[1 mark]

b) List the prime numbers between 70 and 90

Answer \_\_\_\_\_  
[1 mark]

c) The product of two prime numbers is always odd. Is this True or False?

Answer \_\_\_\_\_  
[1 mark]

**Question 3**

Find the highest common factor of:

a) 18 and 45

Answer \_\_\_\_\_  
[1 mark]

b) 12, 36 and 54

Answer \_\_\_\_\_  
[1 mark]

**Question 4**

Three cars are going around a rally racetrack. The first car completes a circuit every 0.25 hours, the second car every 0.4 hours and the third car every 0.5 hours. They start together at 2pm. How long is it before all three cars are level again?

Answer \_\_\_\_\_

[2 marks]

**Question 5**

Write these as powers of 7:

a)  $7^3 \times 7^2 =$

Answer \_\_\_\_\_

[1 mark]

b)  $7^8 \div 7^5 =$

Answer \_\_\_\_\_

[1 mark]

c)  $7^4 \times 7^5 \div 7 =$

Answer \_\_\_\_\_

[1 mark]

d)  $(7^4)^2 =$

Answer \_\_\_\_\_

[1 mark]

**Question 6**

Ian weighs a box which contains 16 glue sticks. It weighs 652g. He then empties the box and weighs it. It weighs 140g. What is the weight of each glue stick?

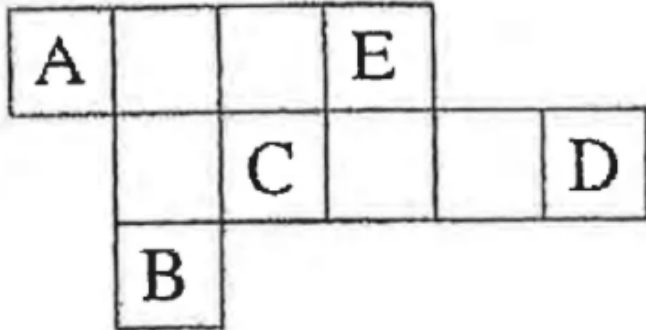
Answer \_\_\_\_\_

[2 marks]



**Question 7**

The diagram shows a shape made from 10 square tiles. Which labelled tile (A, B, C, D or E) could be removed without changing the perimeter of the shape?



Answer \_\_\_\_\_

[1 mark]

**Question 8**

Simplify:

a)  $m + m + m - m + m =$

Answer \_\_\_\_\_

[1 mark]

b)  $3g \times 5 =$

Answer \_\_\_\_\_

[1 mark]

c)  $5s + 4t + 2s + t =$

Answer \_\_\_\_\_

[1 mark]

**Question 9**

$p = 9, q = -3, r = 5$

Work out the value of:

a)  $3p - 4$

Answer \_\_\_\_\_

[1 mark]

b)  $4q + 9r$

Answer \_\_\_\_\_

[1 mark]

**Question 10**

Pat has  $x$  cards.

Jim has 4 more cards than Pat.

- a) Write down an expression, in terms of  $x$ , for the number of cards Jim has.

Answer \_\_\_\_\_

[1 mark]

Lex has 2 times as many cards as Pat.

- b) Write down an expression, in terms of  $x$ , for the number of cards Lex has.

Answer \_\_\_\_\_

[1 mark]

**Question 11**

This chart shows the time, in minutes, it takes Mrs Annery to walk between villages around Petersfield.

|             |        |       |       |           |
|-------------|--------|-------|-------|-----------|
| Petersfield |        |       |       |           |
| 17          | Stroud |       |       |           |
| 15          | 15     | Steep |       |           |
| 12          | 25     | 8     | Sheet |           |
| 47          | 31     | 35    | 52    | East Meon |

- a) How long does it take for her to walk between Steep and East Meon?

Answer \_\_\_\_\_  
[1 mark]

Mrs Annery walks from Stroud to East Meon. 17 minutes into the journey, she stops for a 13-minute rest.

- b) Work out how much longer she must walk to reach East Meon.

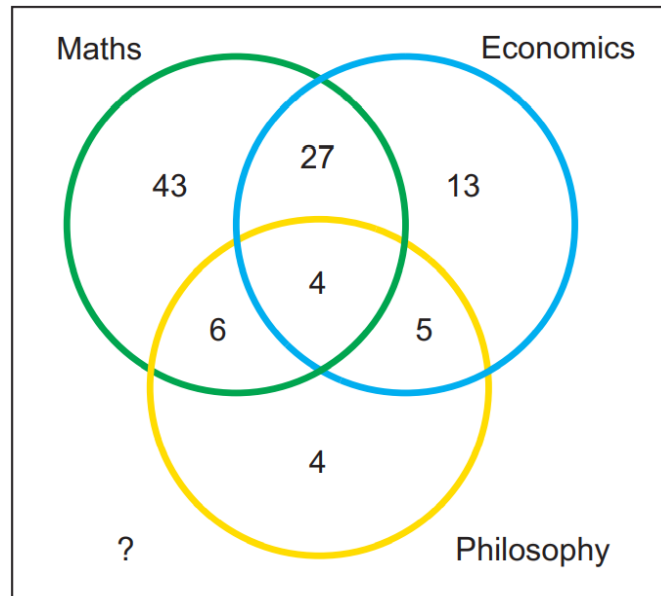
Answer \_\_\_\_\_  
[1 mark]

- c) What was her total journey time between Stroud and East Meon?

Answer \_\_\_\_\_  
[1 mark]

**Question 12**

Temi has chosen to study maths, economics and philosophy for A-levels. There are 120 students in Year 12. The Venn diagram shows the students that have chosen at least one subject in common with Temi.



- a) How many students take exactly the same three subjects as Temi?

Answer \_\_\_\_\_  
[1 mark]

- b) What fraction of year 12 take maths

Answer \_\_\_\_\_  
[1 mark]

c) How many students do not take any of the subjects Temi takes?

Answer \_\_\_\_\_

[1 mark]

d) What percentage have only one subject in common with Temi?

Answer \_\_\_\_\_

[1 mark]

**Question 13**

A group of students went to an outdoor centre.  $\frac{1}{4}$  of them went canoeing and  $\frac{2}{5}$  of them went sailing. The rest went mountain biking. What fraction of the group went mountain biking?

Answer \_\_\_\_\_

[1 mark]



**Question 14**

Write :

a) 35 as a percentage of 50

Answer \_\_\_\_\_  
[1 mark]

b) 520 as a percentage of 800

Answer \_\_\_\_\_  
[1 mark]

c) 75p as a percentage of £2.50

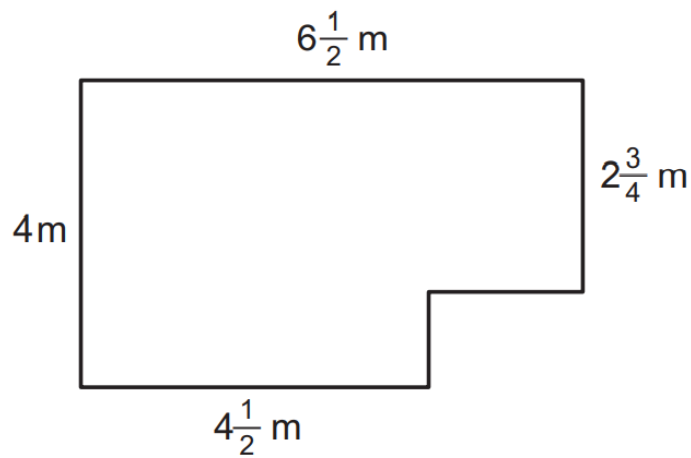
Answer \_\_\_\_\_  
[1 mark]

d) 900m as a percentage of 3.6km

Answer \_\_\_\_\_  
[1 mark]

**Question 15**

This is a plan of Katie's bedroom.



She wants to buy covering to line all around the edges of the ceiling.

a) What length of covering does she need?

Answer \_\_\_\_\_

[1 mark]

She also wants to tile the floor. The tiles are 50cm by 50 cm.

b) How many tiles will she need to cover her floor?

Answer \_\_\_\_\_

[3 marks]

**Question 16**

Calculate the size of the smallest angle



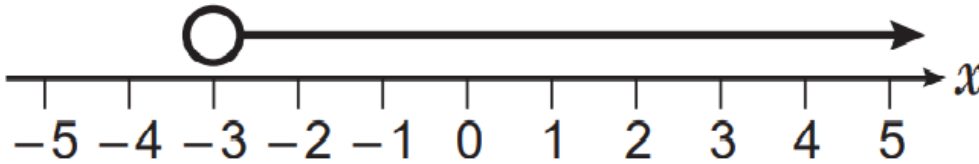
Answer \_\_\_\_\_

[2 marks]

**Question 17**

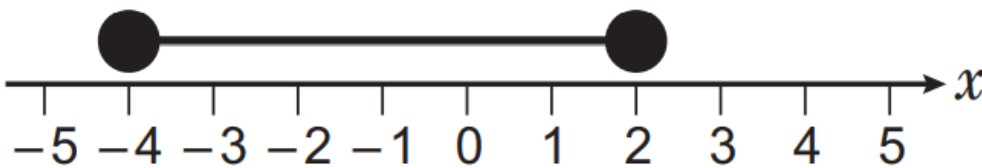
Write down the inequalities represented on these number lines.

a)



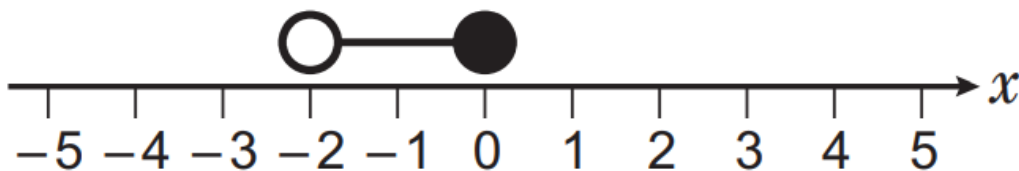
Answer \_\_\_\_\_  
[1 mark]

b)



Answer \_\_\_\_\_  
[1 mark]

c)

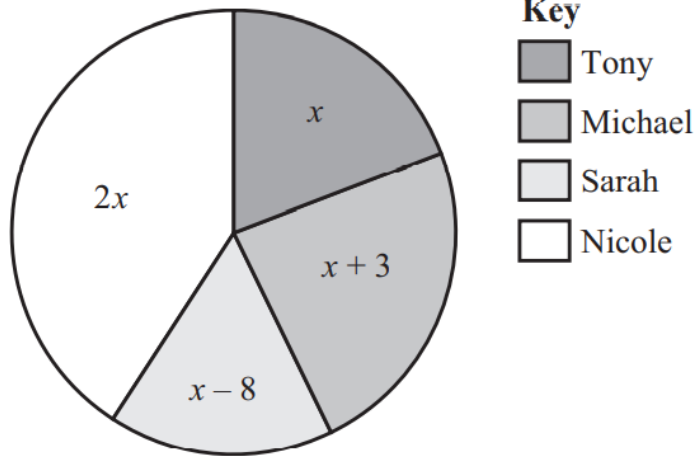


Answer \_\_\_\_\_  
[1 mark]

**Question 18**

The pie chart shows the percentages of votes four nominees received.

Percentage of the class vote



a) What fraction of the votes did Sarah get?

Answer \_\_\_\_\_

[3 marks]

b) What fraction of the votes did Michael get?  
Give your answer in the simplest form.

Answer \_\_\_\_\_

[1 mark]

**Question 19**

Some students compared how many pets they have.

| Pets     |                |
|----------|----------------|
| Name     | Number of pets |
| Travis   | 6              |
| Fernando | 4              |
| Gwen     | 4              |
| Hanson   | 4              |
| Maya     | 5              |

a) What is the median value?

Answer \_\_\_\_\_  
[1 mark]

b) What is the mode?

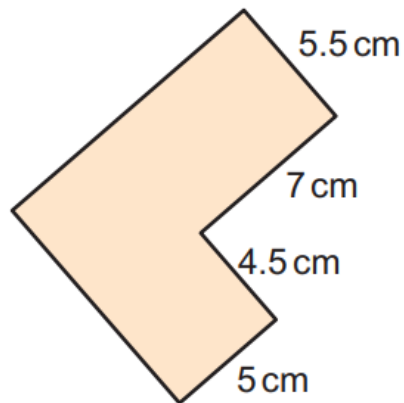
Answer \_\_\_\_\_  
[1 mark]

c) What is the range?

Answer \_\_\_\_\_  
[1 mark]

**Question 20**

Look at this shape



- a) What is the area?

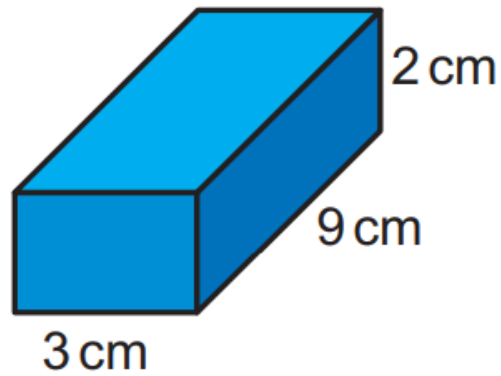
Answer \_\_\_\_\_  
[1 mark]

- b) What is the perimeter?

Answer \_\_\_\_\_  
[1 mark]

**Question 21**

Look at this shape



- a) What is the volume?

Answer \_\_\_\_\_  
[1 mark]

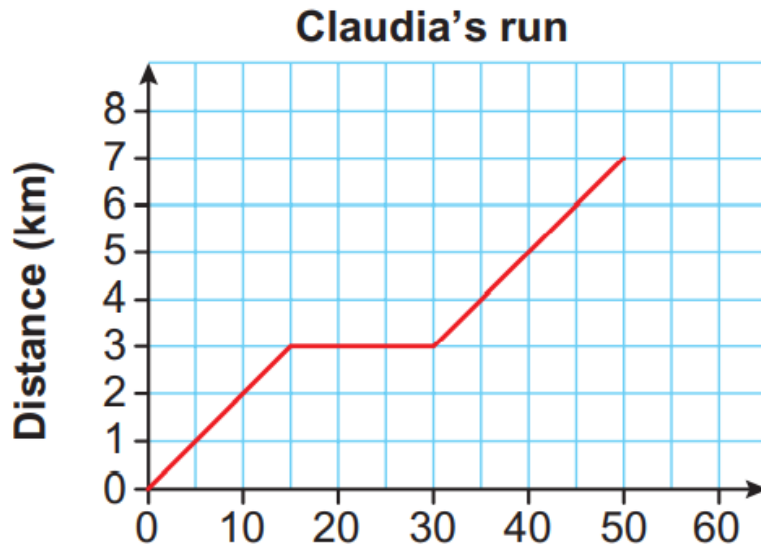
- b) What is the surface area?

Answer \_\_\_\_\_  
[1 mark]



**Question 22**

This distance-time graph shows Claudia's morning run.



- a) How far did Claudia jog on the first part of the run?

Answer \_\_\_\_\_

[1 mark]

- b) How long did she jog for before she stopped for a break?

Answer \_\_\_\_\_

[1 mark]

c) How long did she rest for?

Answer \_\_\_\_\_

[1 mark]

d) What was her average speed in km/h for the first part of her run?

Answer \_\_\_\_\_

[1 mark]

e) How long did the last part of the run take?

Answer \_\_\_\_\_

[1 mark]

f) How far did she jog on the last part of the run?

Answer \_\_\_\_\_

[1 mark]

g) What was her average speed for the last part of the run?

Answer \_\_\_\_\_

[1 mark]

**End of paper. Remember to check your workings.**