

SECTION A

Each question in this section is worth three marks.

Answer in the spaces provided.

1. Fill in the blank squares

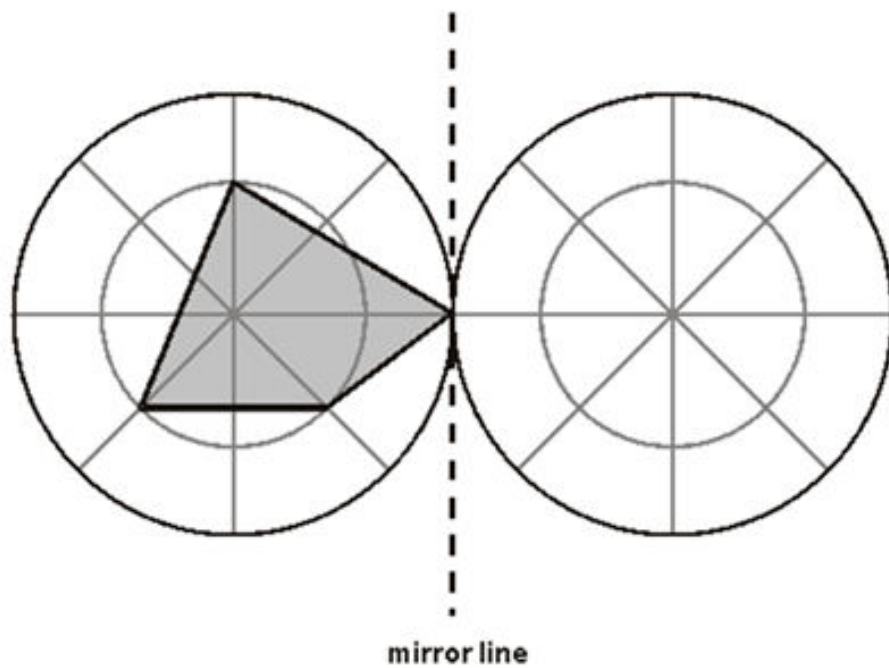
(a) $11 + 47 =$

(b) $38 - 72 =$

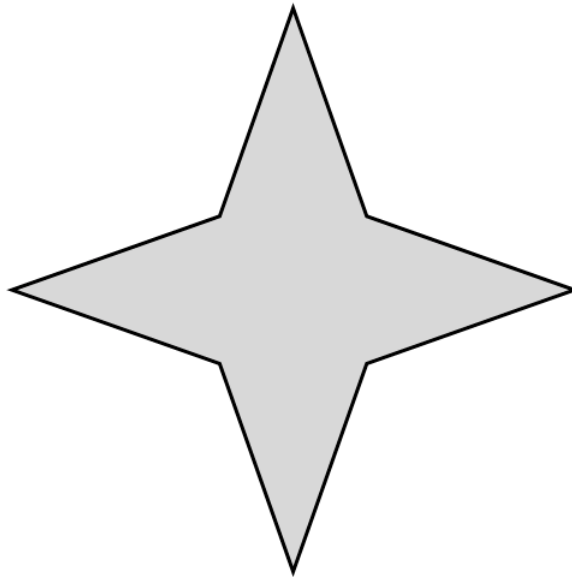
(c) $108 \div 9 =$

(d) $2.5 \times 12 =$

2. (a) Draw the reflection of the shaded shape in the mirror line. Use a ruler.



(b) How many lines of symmetry does this star shape have?



Answer:

3. (a) Put these five fractions into ascending order.

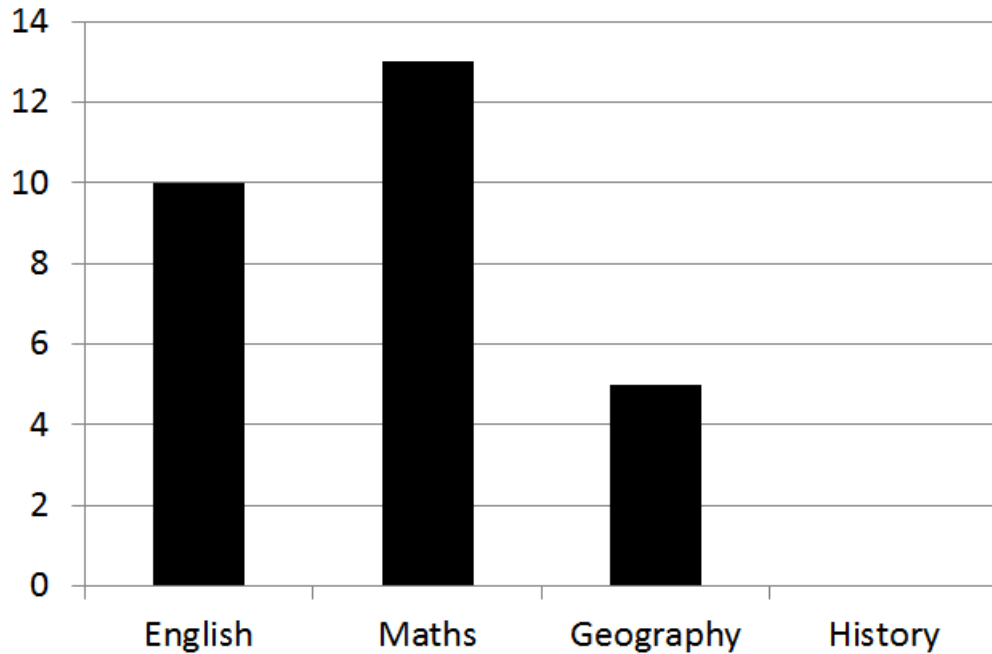
$$\frac{5}{12}, \frac{3}{4}, \frac{1}{2}, \frac{1}{3}, \frac{5}{6}$$

Answer:

(b) Big Burger sells 400g of chips for £1.20 and Terry's Take-Out sells 600g of chips for £1.50. Which shop represents better value for money? You must show working.

Answer:

4. Susan does a survey of her class to find out which subject was their favourite. She then produced a bar-chart as shown below.



- (a) How many have English as their favourite subject?

Answer:

- (b) What is the difference between those who have Maths and those who have Geography as their favourite subject?

Answer:

- (c) Susan forgot to plot the bar for History, in the space provided plot the bar if 7 students chose History.

5. (a) What is 15% of 80?

Answer:

(b) If 42 is 20% of a number, what is 50% of that number?

Answer:

6. Fill in the blank squares

$$(a) \quad 37 + \square = 53$$

$$(b) \quad 12 - \square = 19$$

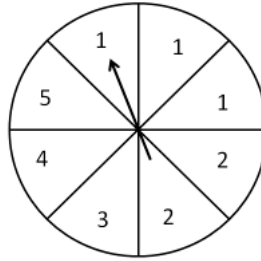
$$(c) \quad 3 \left(\square - 5 \right) = 21$$

7. An isosceles triangle has perimeter of 16cm and one side has length 6cm. Give the possible lengths of the other two sides. Note there are two pairs of answers that you should consider.

Answer 1:

Answer 2:

8. Consider the following fair spinner (each of the segments is equally likely).



(a) What is the probability that the number 1 is spun?

Answer:

(b) If the spinner is spun 100 times how many times would you expect to spin the number 2?

Answer:

9. Henry thinks of a number and then triples it. He then adds seven. Finally he halves this number. He ends up with 20. Calculate Henry's original number.

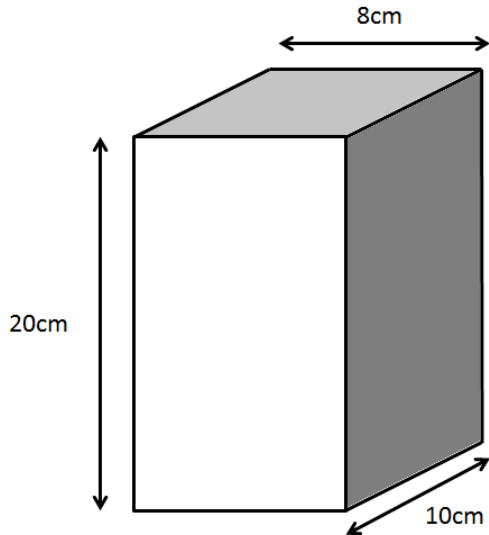
Answer:

10. (a) Is 12 a factor of 48? Explain how you can tell.

(b) Find the other two proper factors of 48 that are greater than 12.

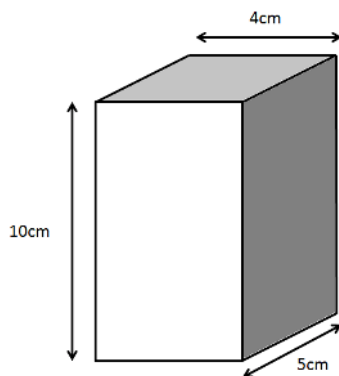
Answer:

11. Ghent Foods sells cereals in boxes which are cuboids with dimensions 20cm by 8cm by 10cm. One such box is shown in the diagram below.



(a) Work out the volume of this box. Answer:

- (b) Austin thinks that customers would prefer boxes that were half as big, so he halves each of the lengths of the edges (as shown in the diagram below). What is the volume of this smaller box?

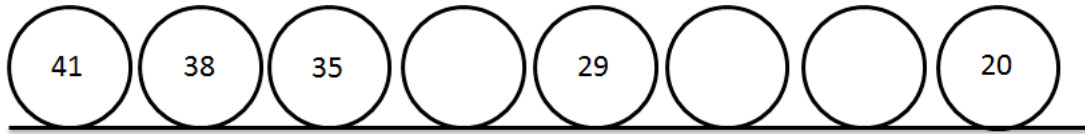


Answer:

- (c) What fraction of volume is the smaller box to that of the bigger box?

Answer:

12. Lynn arranges numbered balls in a row in a pattern as shown below.



(a) Fill in the missing numbers.

(b) Lynn continues to put them in a row in this manner until she places one with a negative number down. How many balls has she lined up?

Answer:

13. In each of the following equations substitute the value $x = 4$ to calculate y .

(a) $y = 2x - 3$

$y = \dots\dots\dots$

(b) $y = 5 - 4x$

$y = \dots\dots\dots$

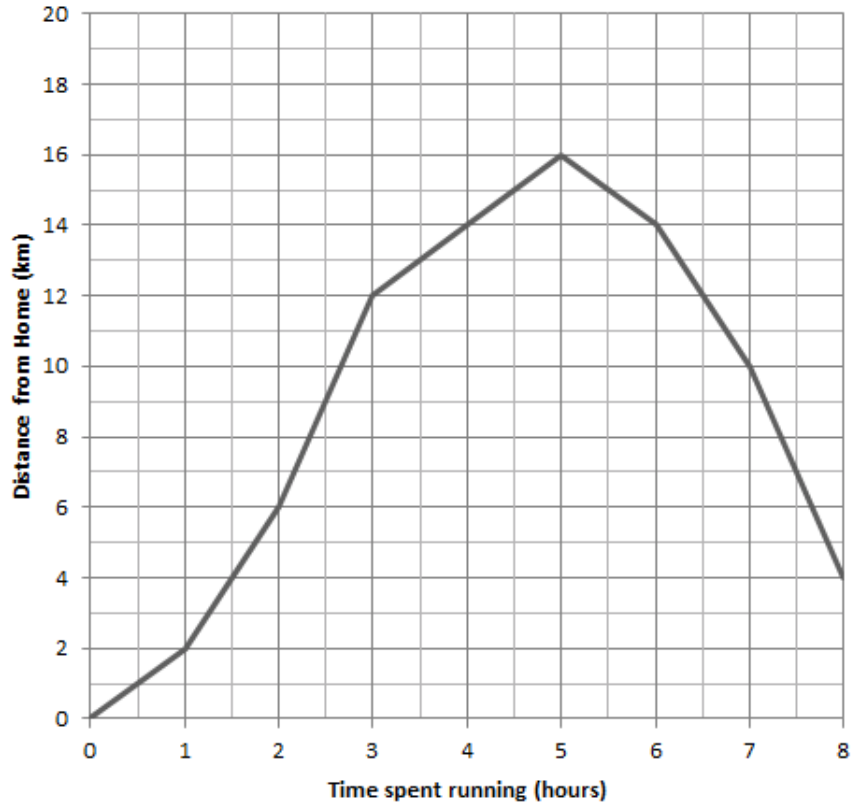
(c) $y = \frac{x}{2} + 3$

$y = \dots\dots\dots$

(c) $x + 2y = 6$

$y = \dots\dots\dots$

14. Consider the following graph which plots Jonathan’s time spent running (in hours) against his distance from home (in kilometres).



(a) How far is Jonathan from home after 4 hours?

Answer:

(b) At what times (in hours and minutes) is he 12 kilometres from home.

Answer:

(c) What is his maximum distance from home?

Answer:

15. Solve the following equations.

(a)

$$4x + 6 = 18$$

$$x = \dots\dots\dots$$

(b)

$$7(12 - x) = 56$$

$$x = \dots\dots\dots$$

16. For the values in the following table, calculate:

(a) $D + E$

Letter	Value
A	4
B	0.1
C	0.02
D	0.25
E	0.008

Answer:

(b) $D - C$

Answer:

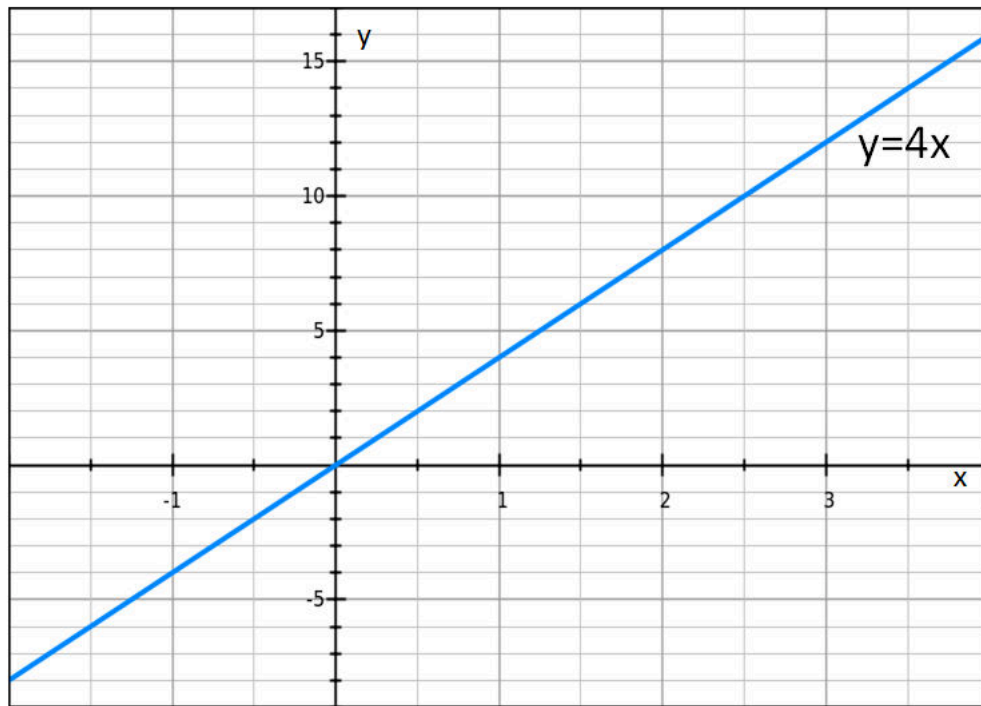
(c) $B \times C$

Answer:

(d) $E \div A$

Answer:

17. Look at the graph of $y = 4x$ plotted below.



(a) Does the point $(3, 12)$ lie on the line $y = 4x$? Justify your answer.

Answer:

(b) Does the point $(15, 65)$ lie on the line $y = 4x$? Justify your answer.

Answer:

(c) Fill out the table below and hence plot the line $y = 4x + 3$

x	-1	0	1	2
$4x+3$			7	

18. The ratio of boys to girls in Fordham College is 3:5.

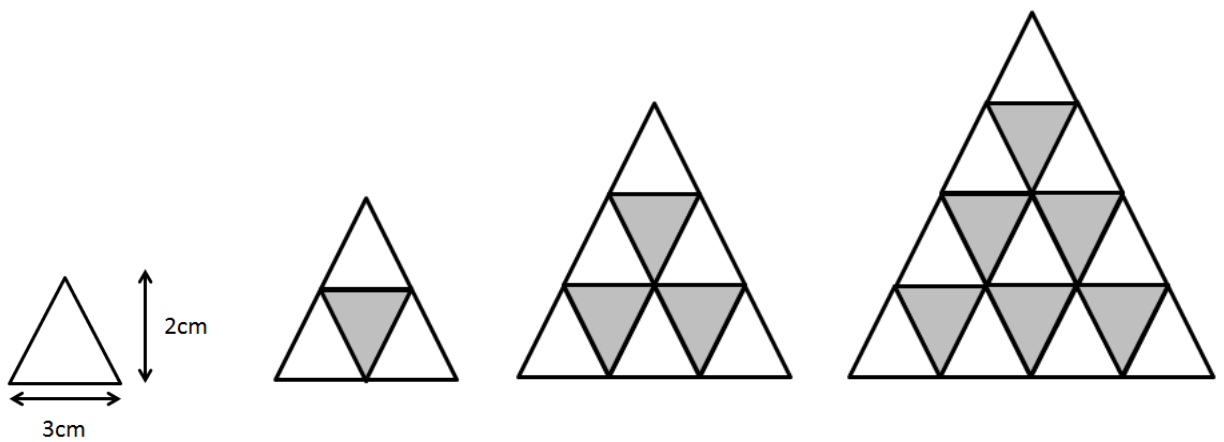
(a) If there are 160 people in Fordham College, how many are boys?

Answer:

(b) Biafra College has the same ratio as Fordham, but only has 39 boys. How many girls are at Biafra College?

Answer:

19. Dominic makes the following four pictures out of identically sized triangles.



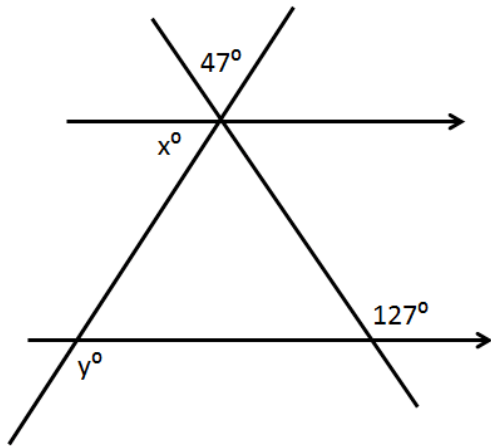
(a) Given these pictures form a sequence, how many triangles must Dominic use to make the next picture in the pattern?

Answer:

(b) If each triangle has dimensions as above, what is the total area of the third picture in the pattern?

Answer:

20. Work out the values of the angles x and y (note: the arrows show that the straight-lines are parallel).



Answers: $x=.....$ $y=$

21. The following five numbers have a mean of 5 and a mode of 4. Unfortunately some mud has been spilled on two of the numbers.



(a) Find the values of the missing two numbers.

Answer:

(b) Find the range of all the values.

Answer:

SECTION B

The question in this section is worth two marks.

Only attempt this question if you have finished Q1-21.

In this multiplication magic square the numbers in each of the rows, columns and diagonals multiply together to give the same result: 1000.

	10	
	1	

Complete this magic square **without** repeating any numbers.