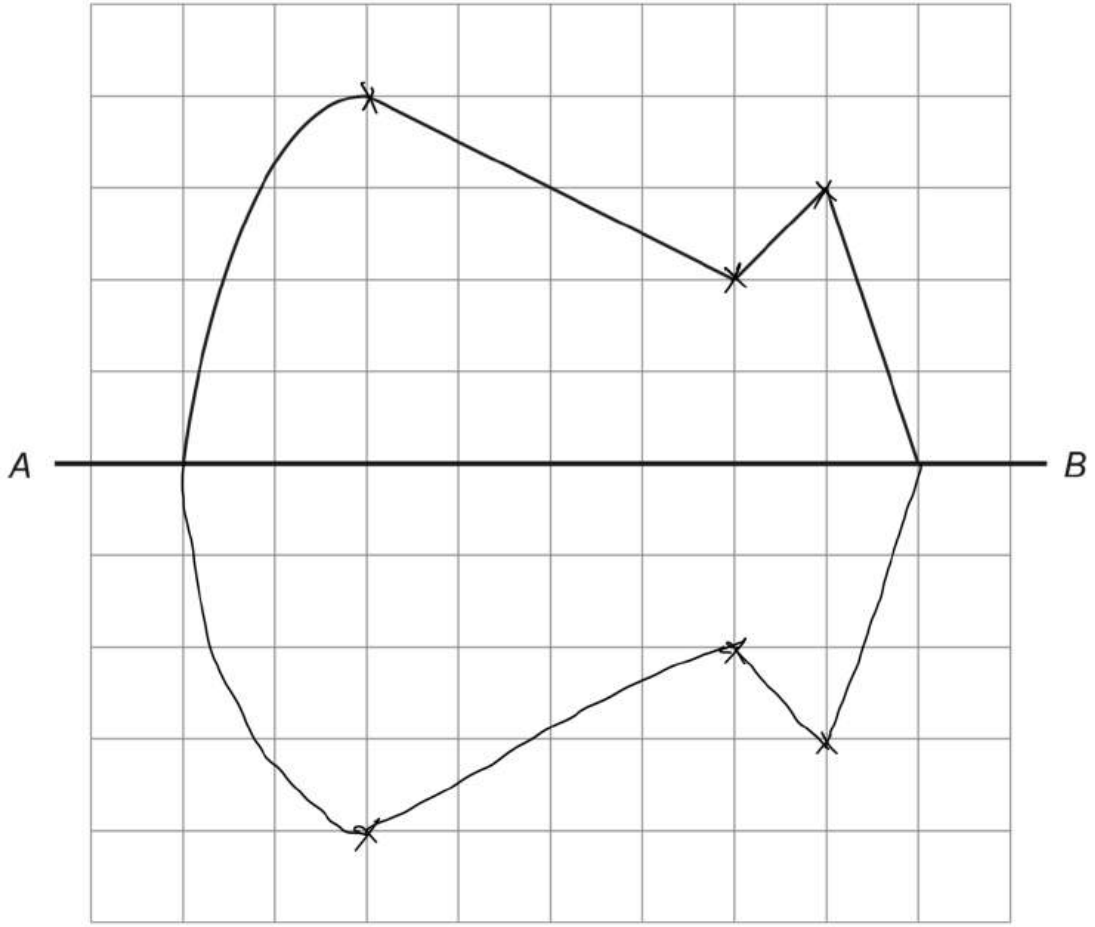
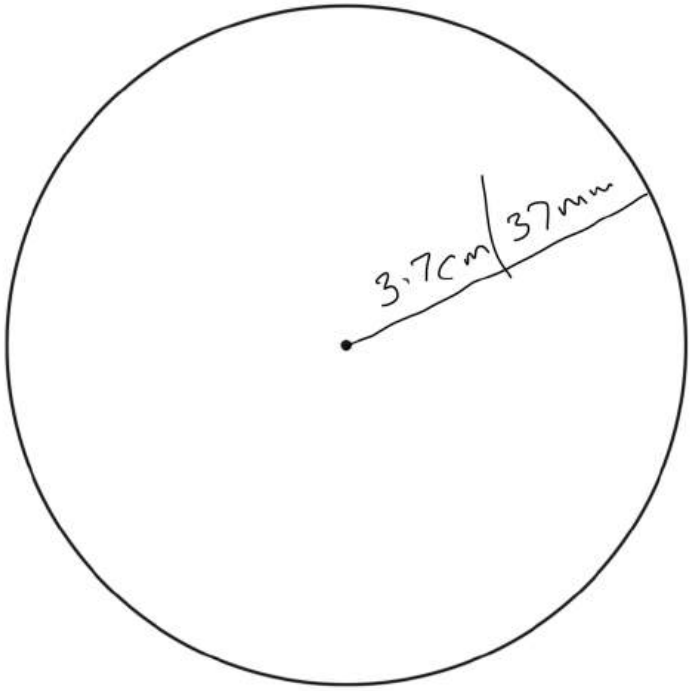
Examiner only

1. *(a)* Draw a reflection of this shape in the line *AB*. [2]



(b) Measure the length of the radius of this circle using metric units.

(b) Measure the length of the radius of this circle using metric units.
State the units you are using. [2]



Radius = 3.7cm

Examiner only

2. *(a)* Huw has 19 coins in his pocket. 19 - 13 = 6
13 of these coins are 10p coins and the rest are 5p coins.
Huw chooses one coin at random from his pocket.

Circle the best expression from those given below to describe the chance that Huw chooses a 5p coin. [1]

impossible **unlikely** **an even chance** **likely** **certain**

(b) Catrin has 10 pieces of fruit in her bag.
She has 4 oranges and 6 apples.

Catrin chooses one piece of fruit at random from her bag.

Circle the best expression from those given below to describe the chance that Catrin chooses a banana from her bag. [1]

impossible **unlikely** **an even chance** **likely** **certain**

.....

.....

3. *(a)* Kate thought of a number.
She multiplied her number by 9 and got the answer 54.

What number did Kate think of? [1]

.....

let Kate's number = x

3. *(a)* Kate thought of a number.
She multiplied her number by 9 and got the answer 54.

What number did Kate think of? [1]

$\frac{x \times 9}{9} = \frac{54}{9}$ $x = 6$

.....

.....

3. *(a)* Kate thought of a number.
She multiplied her number by 9 and got the answer 54.

What number did Kate think of? [1]

(b) Write **a positive whole number** in each empty box to make this statement true. [1]

2	×	8	+	5	=	21

8, 16

1 × 8 + 13 = 21

1×8, 2×8

2 × 8 + 5 = 21

21 − 8 = 13, 21 − 16 = 5

Examiner only

4. *In this question, you will be assessed on the quality of your organisation, communication and accuracy in writing.*

A square is made using four rods of equal length joined end to end.
The perimeter of this square is 72 cm.
Three of these rods are now joined end to end to make an equilateral triangle.

What is the perimeter of this equilateral triangle?
You must show all your working. [3 + 2 OCW]

1 rod = 72 ÷ 4 = 18 cm

$$4\overline{)72}\quad 18$$

3 rods = 18 × 3 = 54 cm

$$\begin{array}{r} 2^{1}8 \\ \times\ 3 \\ \hline 54 \end{array}$$

Perimeter of equilateral triangle = 54 cm

5. Solve the following equations.

5. Solve the following equations.

(a) $20x = 120$ [1]

$\frac{20 \times x}{20} = \frac{120}{20} \div 20 = \frac{6}{1} = 6$

$x = 6$

(b) $40 - y = 25$ [1]

$+y \quad +y$

$40 = 25 + y$

$-25 \quad -25$

$15 = y$

Examiner only

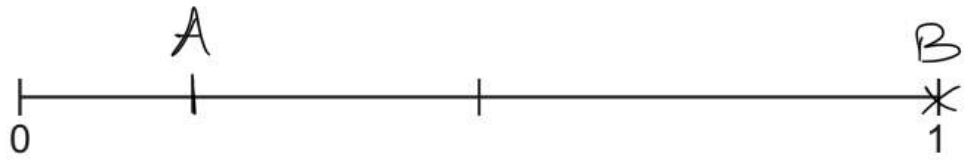
6. Arjuna has the 10 cards shown below.

2	4	7	8	9	11	15	16	18	19

He puts the cards in a box and then chooses one at random.

On the probability scale shown below, mark the points A and B where:

- A is the probability of Arjuna choosing a number that is greater than 16, $= \frac{2 \div 2}{10 \div 2} = \frac{1}{5}$
- B is the probability of Arjuna choosing a number that is less than 20. $= \frac{10}{10} = 1$ [2]



Examiner only

7. There are 204 students at Ysgol Bryn.
The caretaker always puts 15 chairs in each row in the school hall.

- How many **complete rows of chairs** must the caretaker put out so that each student can sit on a chair?
- How many empty chairs will there be? [5]

Number of rows required = $204 \div 15$

$\frac{204 \div 3}{15 \div 3} = \frac{68}{5} = 13.6$ rows

$204 \div 3 = 068$

$68 \div 5 = 13.6$

Number of complete rows required = 14

Total chairs = $14 \times 15 = 210$ chairs

$14 \times 15 = 70 + 140 = 210$

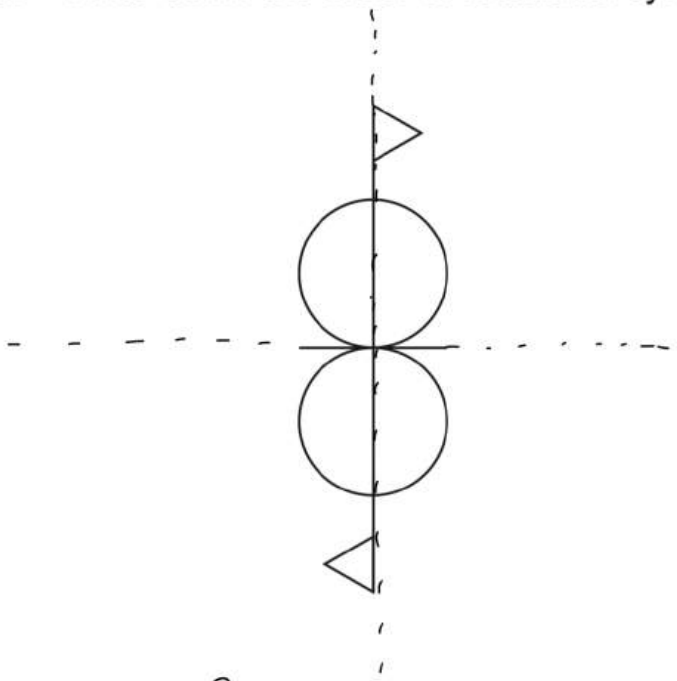
Empty chairs = $210 - 204 = 6$ empty chairs

Number of complete rows of chairs = 14

Number of empty chairs = 6

Examiner only

8. Write down the order of rotational symmetry for each of the following. [2]



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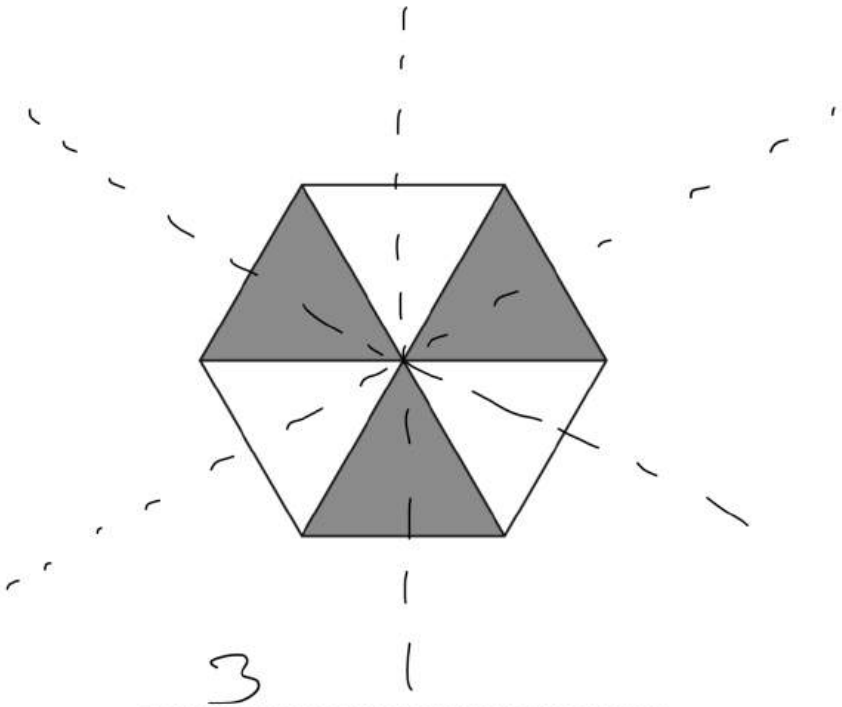


3

Examiner only

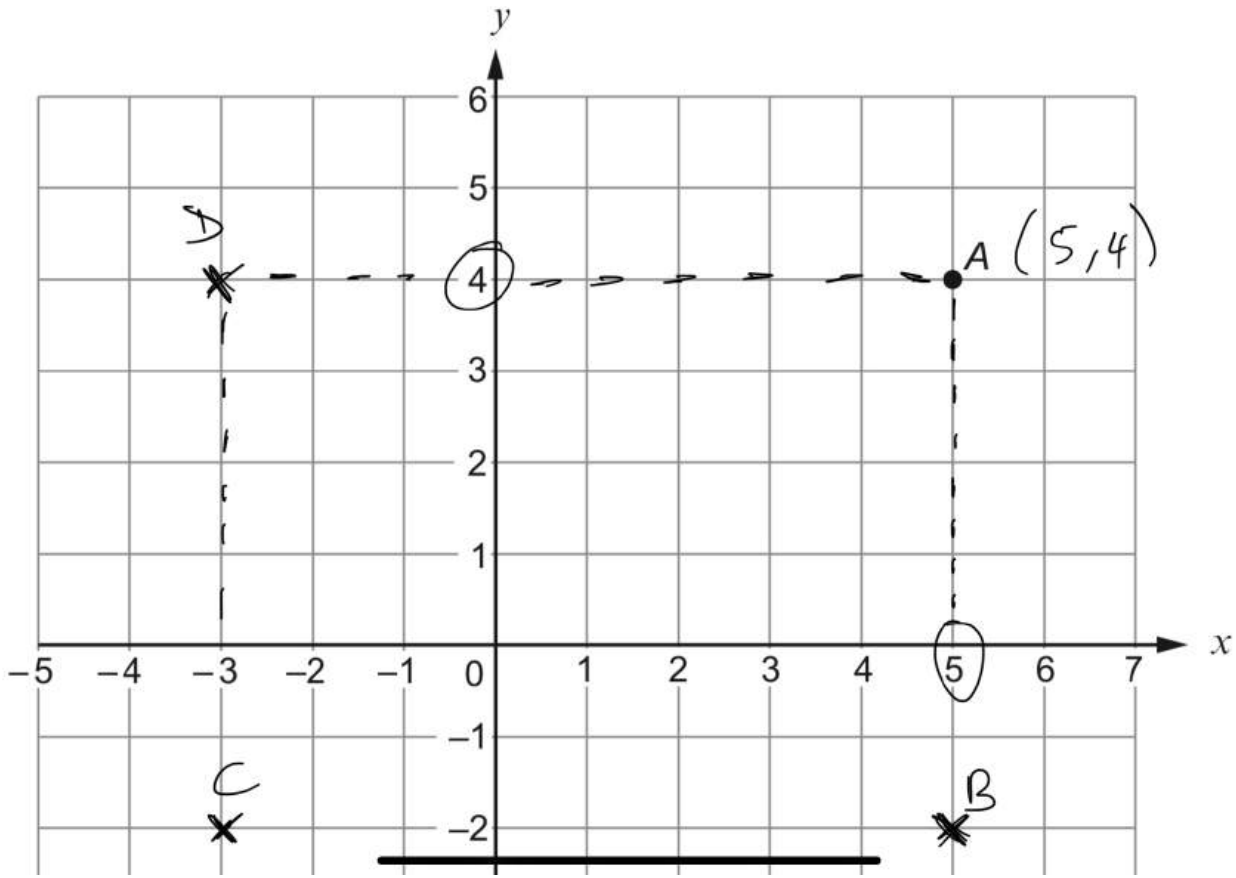
9. *(a)* The point *A* is plotted on the grid below.

Write down the coordinates of *A*. (5, 4) [1]

(b) Plot the points *B*(5, −2) and *C*(−3, −2) on the grid. [2]

(c) *ABCD* is a rectangle.

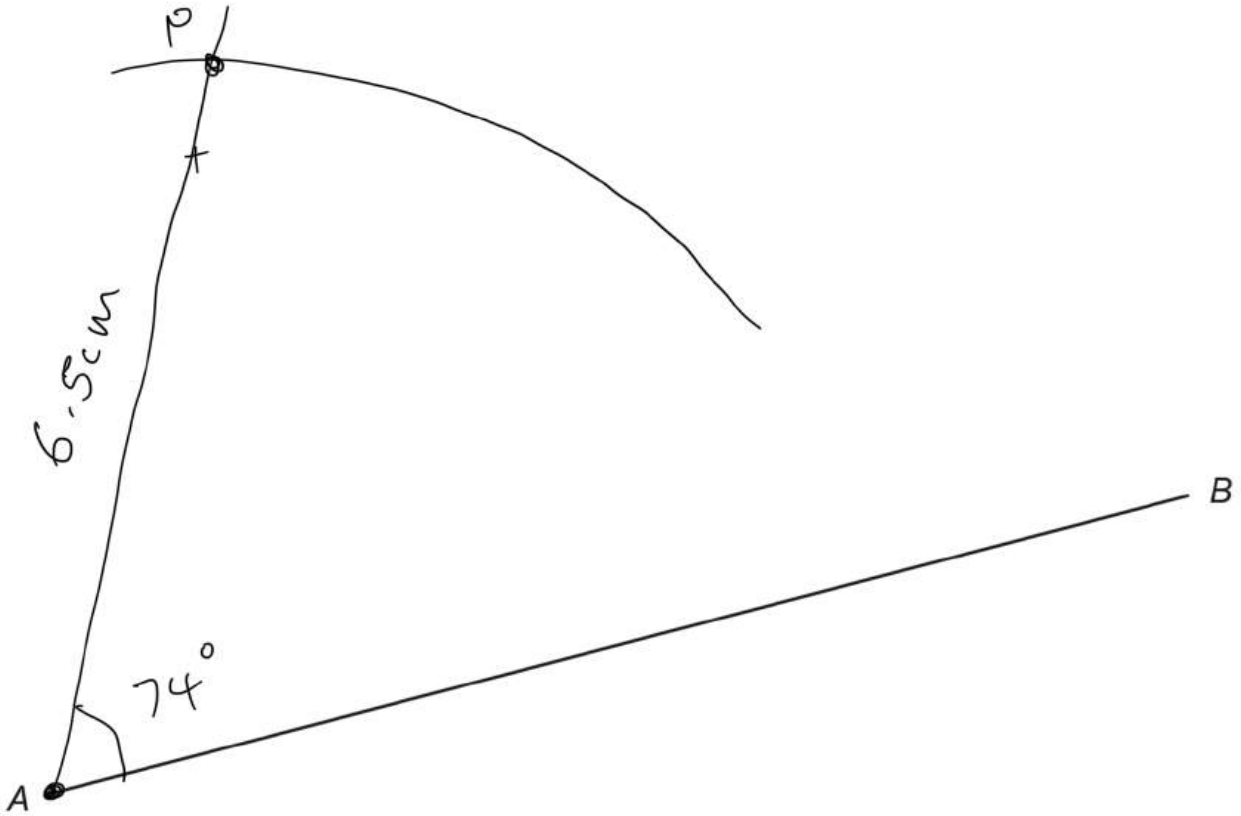
Write down the coordinates of *D*. (−3, 4) [1]



only

10. On the diagram, mark the point P with a cross so that

- $B\hat{A}P = 74°$
- $AP = 6{\cdot}5\,\text{cm}$. [2]



11. Find the size of angle x. [2]

11. Find the size of angle x. [2]

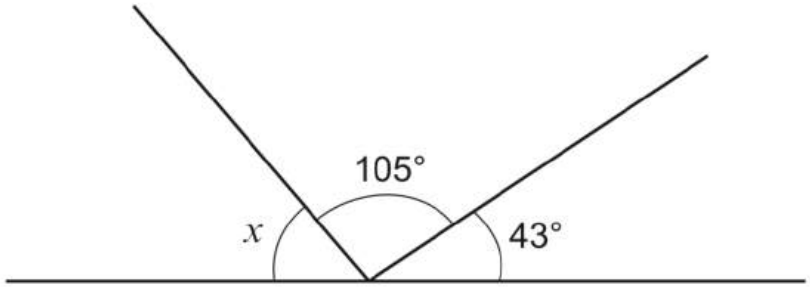


Diagram not drawn to scale

Angles on a straight line add up to 180°

$x + 105 + 43 = 180$

$x + 148 = 180$

$-148 \quad -148$

$x = 32$

$x =$ 32 °

Examiner only

12. Calculate each of the following.

(a) $0{\cdot}4 \times 0{\cdot}7$ [1]

$7 \times 4 = {\cdot}28$

$0{\cdot}28$

(b) $13{\cdot}8 - 7{\cdot}45$ [1]

$13.80 - 07.45 = 6{\cdot}35$

(c) $3^3 - 2^4$ [2]

$3^3 = 3 \times 3 \times 3 = 27$ $\quad 27 - 16 = 11$

$2^4 = 2 \times 2 \times 2 \times 2 = 16$

(d) $\frac{9}{10} - \frac{3}{5}$ [2]

$\frac{9}{10} - \frac{3 \times 2}{5 \times 2} \quad \frac{9}{10} - \frac{6}{10} = \frac{3}{10}$

13. Circle either TRUE or FALSE for each of the following statements. [3]

20% of 70 is the same as 70% of 20.	TRUE	FALSE
$\frac{1}{2}$ of $\frac{1}{8}$ is the same as $\frac{1}{8}$ of $\frac{1}{2}$	TRUE	FALSE
A number is halved. The answer is halved, and then this answer is halved again. This gives the same answer as dividing the original number by 6.	TRUE	FALSE
Dividing a number by 15 is the same as first dividing by 10 and then dividing the answer by 5.	TRUE	FALSE
Multiplying a number by 2·5 is the same as first multiplying by 10 and then dividing the answer by 4.	TRUE	FALSE

Space for working:

only

Examiner only

14. A shop has 31 plant pots.
Some are blue, some are yellow and the rest are red.
There are five more blue pots than yellow pots.
There are four times as many blue pots as there are red pots.

Calculate how many pots there are of each colour. [3]

No. of blue pots = b No. of red pots = r No. of yellow pots = y

$b = y + 5$ $b = 4 \times r$ $b + r + y = 31$

$4r = y + 5$ $b = 4r$ $4r + r + y = 31$

$4r - y = 5$ $b = 4 \times 4$ $5r + y = 31$ — (1)

$y = b - 5$ $b = 16$ $4r - y = 5$ — (2)

$y = 16 - 5$ $\frac{9r}{9} = \frac{36}{9}$ (1) + (2)

$y = 11$ $r = 4$

Blue 16 Yellow 11 Red 4

15. *(a)* Write down the next two numbers in the following sequence. [2]

33 26 19 12 ....

Blue ..... Yellow ..... Red .....

15. *(a)* Write down the next two numbers in the following sequence. [2]

$$33 \xrightarrow{-7} 26 \xrightarrow{-7} 19 \xrightarrow{-7} 12 \xrightarrow{-7} 5 \xrightarrow{-7} -2$$

(b) Solve the equation $13y - 5 = 9y + 27$. [3]

$-9y \quad -9y$

$4y - 5 = 27$

$+5 \quad +5$

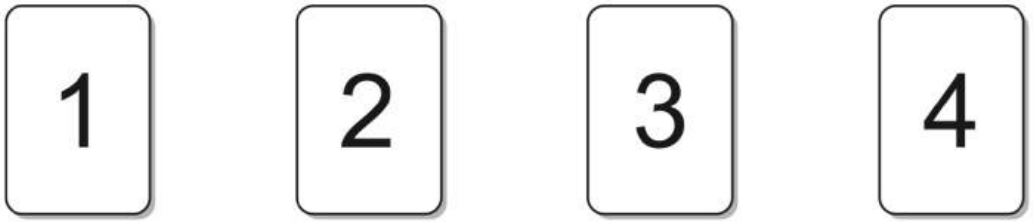
$\frac{4y}{4} = \frac{32}{4}$

$y = 8$

only

16. Three **red** cards have the following numbers written on them.

Four **green** cards have the following numbers written on them.



In a game, the cards are turned face down.
A player chooses one red card and one green card at random.
The player's score is the sum of the two numbers.

(a) Complete the following table. [1]

Red card \ Score	1	2	3	4
9	10	11	12	13
6	7	8	9	10
3	4	5	6	7

In a game, the cards are turned face down.
A player chooses one red card and one green card at random.
The player's score is the sum of the two numbers.

(a) Complete the following table. [1]

		Score			
Red card	9	10	11	12	13
	6	7	8	9	10
	3	4	5	6	7
		1	2	3	4

Green card

(b) A player wins a prize if the score is **more** than 9.
Safira plays the game once. What is the probability that she wins a prize? [2]

$\frac{5}{12}$

(c) 60 people play the game once.
Approximately how many people would you expect to win a prize? [2]

$\frac{5}{12} \times 60 = 5 \times 5 = 25$ people

17. A right-angled triangle *BCD* is joined to a rectangle *ABDE*, as shown below.

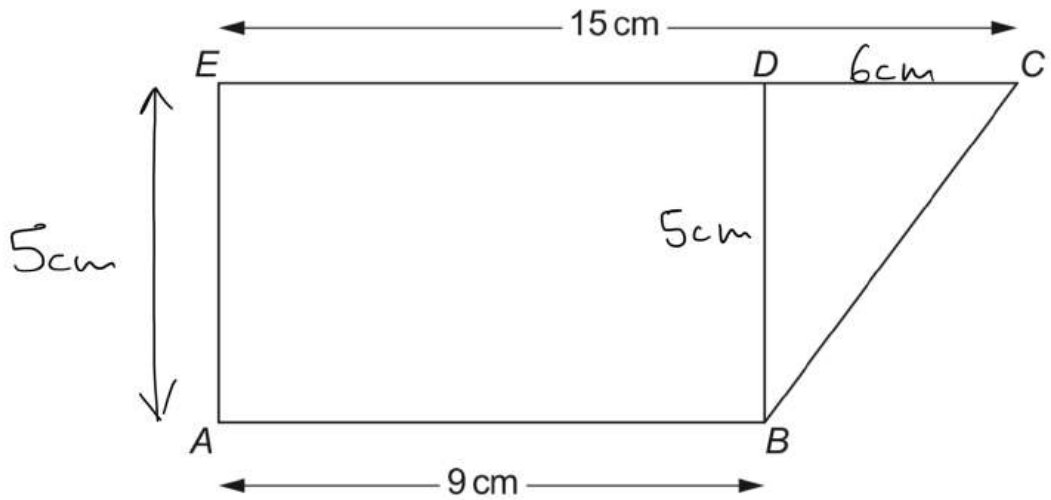


Diagram not drawn to scale

The area of the rectangle is 45 cm^2.

Calculate the area of the right-angled triangle.
You must show your working. [5]

AE x AB = 45
AE x 9 = 45
AE = $\frac{45}{9}$
AE = 5cm

DC = 15 − ED
ED = AB = 9
DC = 15 − 9
DC = 6 cm

AE = BD = 5cm
Area of Triangle = $\frac{1}{2}$ x base x height
Area = $\frac{1}{2}$ x 6 x 5
Area = 15 cm^2

Examiner only

18. Two types of number are added or multiplied together.
Complete the table below to show whether the answer will be odd or even.
One answer has been filled in for you. [3]

Calculation:	Answer will be:
even number + even number	even
even number + odd number	odd
odd number + odd number	even
even number × even number	even
even number × odd number	even
odd number × odd number	odd

2 + 1 = 3

1 + 1 = 2

2 × 2 = 4

2 × 1 = 2

1 × 1 = 1

Examiner only

19. Write down five numbers that satisfy all of the following conditions:

- They are all between 1 and 9 inclusive.
- They have a median value of 6.
- They have a range of 7. 8 − 1
- Their mean is 5.

[3]

1 4 6 6 8

8 + 6 + 1 = 15

25 − 15 = 10

6 + 4 = 10

Sum / Number = mean

→ Sum = 5 × 5 = 25

Sum = frequency × mean

of frequency numbers

1	4	6	6	8

END OF PAPER