Oxford Cambridge and RSA

GCSE (9-1) Mathematics

J560/05 Paper 5 (Higher Tier)

Question Set 4

1. In 2017, a chocolate bar had a mass of 250 g.
In 2018, the mass of the chocolate bar was reduced to 220 g.

Work out the percentage decrease in the mass of the chocolate bar from 2017 to 2018.

..... % **[3]**

2. Solve.

$$6x - 10 = 4x + 1$$

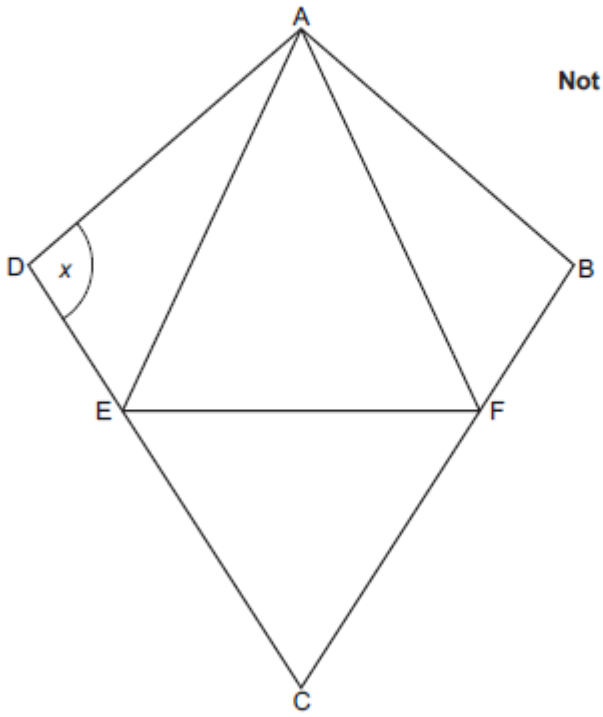
$x =$ ..... **[3]**

3. Solve by factorising.

$$x^2 + 9x + 20 = 0$$

$x =$ ..... or $x =$ ..... **[3]**

4. The diagram shows a kite, ABCD.
AFE and CEF are equilateral triangles.



Not to scale

(a) Write down a mathematical name for quadrilateral AFCE.

(a) ..... **[1]**

(b) The ratio of angle DAE : angle EAF = 1 : 4.

Work out angle x.
Write on the diagram the values of any other angles you use in your working.

(b) $x =$ ..... ° **[4]**

5. On a plane, $\frac{2}{5}$ of the passengers were British.

30% of the British passengers were men.
There were 36 British men on the plane.

Find the total number of passengers on the plane.

..... **[5]**

6. A bag contains 100 pencils that are either red or green.

Describe a method you could use to estimate the number of red pencils in the bag without looking into the bag or having more than one of the pencils out of the bag at any one time.

.....

.....

.....

..... **[4]**

7. **(a)** **(i)** Write $\frac{1}{3}$ as a recurring decimal.

(a)(i) ..... **[1]**

(ii) Write $\frac{1}{30}$ as a recurring decimal.

(ii) ..... **[1]**

(b) Simplify fully by rationalising the denominator.

$$\frac{20}{\sqrt{5}}$$

(b) ..... **[3]**

8. 50 people attended an outdoor activity day.

- 40 took part in walking.
- 18 took part in sailing.
- 3 did neither activity.

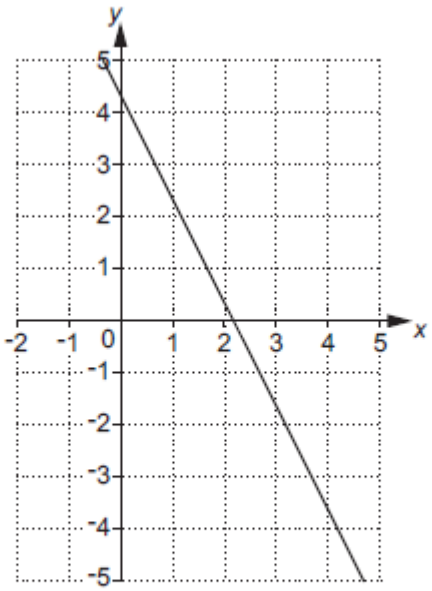
One of the people who walked is chosen at random.

Find the probability that this person also sailed.

..... **[5]**

9. Show that $\sqrt[3]{a^4} \times \frac{1}{a}$ can be expressed as $a^{\frac{1}{3}}$. **[3]**

10. The graph of $3y + 6x = 13$ is drawn on the grid.



The region R satisfies these inequalities.

$3y + 6x \geqslant 13$ $y \leqslant x - 2$ $x > 3$

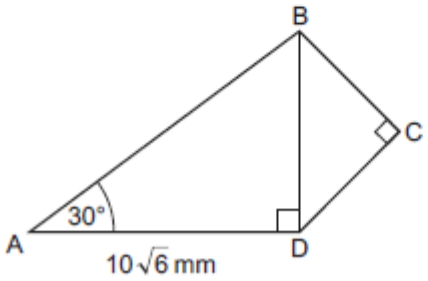
By drawing two more straight lines, find and label the region R. **[6]**

11. **(a)** Write down the value of sin 45°.

(a) ..... **[1]**

(b) ADB and BCD are right-angled triangles.
BC = CD.
AD = $10\sqrt{6}$ mm.
Angle BAD = 30°.

$\tan 30° = \frac{1}{\sqrt{3}}$



Not to scale

Work out the length of BC.

(b) .....mm **[6]**

Total Marks for Question Set 4: 49