Name ..... Class .....

# Calculator Crossover Paper 1

GCSE Mathematics · Foundation and Higher

40 marks · 45 minutes · Calculator

**1** Kayla measures the length of a pencil.

She says the length is 14.7 cm, correct to 1 decimal place.

Write down the error interval for the length, $L$ cm, of the pencil.

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

**[Question 1: 2 marks]**

**2** (a) Expand and simplify $4(2x - 3) - 3(x - 5)$

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

(b) Expand and simplify $(x + 6)(x - 4)$

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

**[Question 2: 4 marks]**

**3** Last year, the price of Owen's annual train season ticket was £2860.
This year, the price of the season ticket is £3245.
Work out the percentage increase in the price of the season ticket.
Give your answer correct to 1 decimal place.

..... % **(3)**

**[Question 3: 3 marks]**

**4** The mass of one grain of sand is $6.4 \times 10^{-4}$ grams.

(a) Write $6.4 \times 10^{-4}$ as an ordinary number.

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

(b) A lorry carries $2.8 \times 10^{7}$ grams of sand.
Work out the number of grains of sand the lorry carries.
Give your answer in standard form.

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

**[Question 4: 3 marks]**

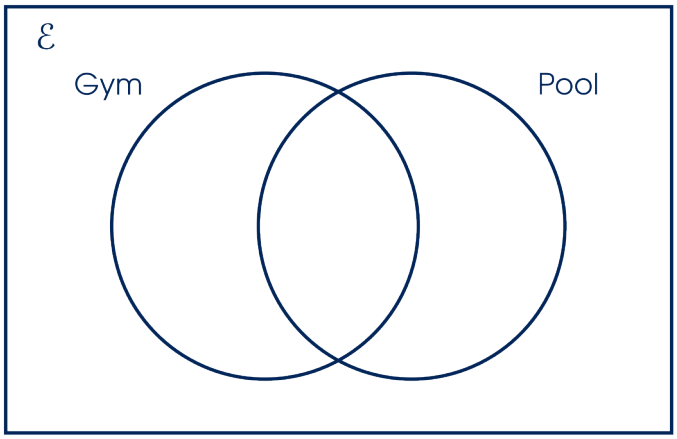
**5** There are 80 members at a leisure centre.

47 of the members use the gym.

29 of the members use the pool.

12 of the members use both the gym and the pool.

(a) Complete the Venn diagram to show this information.




**(3)**

(b) One of the 80 members is chosen at random.

Find the probability that this member uses neither the gym nor the pool.

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

**[Question 5: 4 marks]**

**6** (a) Solve $7x - 4 > 3x + 9$

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

(b) Write down the smallest integer that satisfies $7x - 4 > 3x + 9$

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

**[Question 6: 3 marks]**

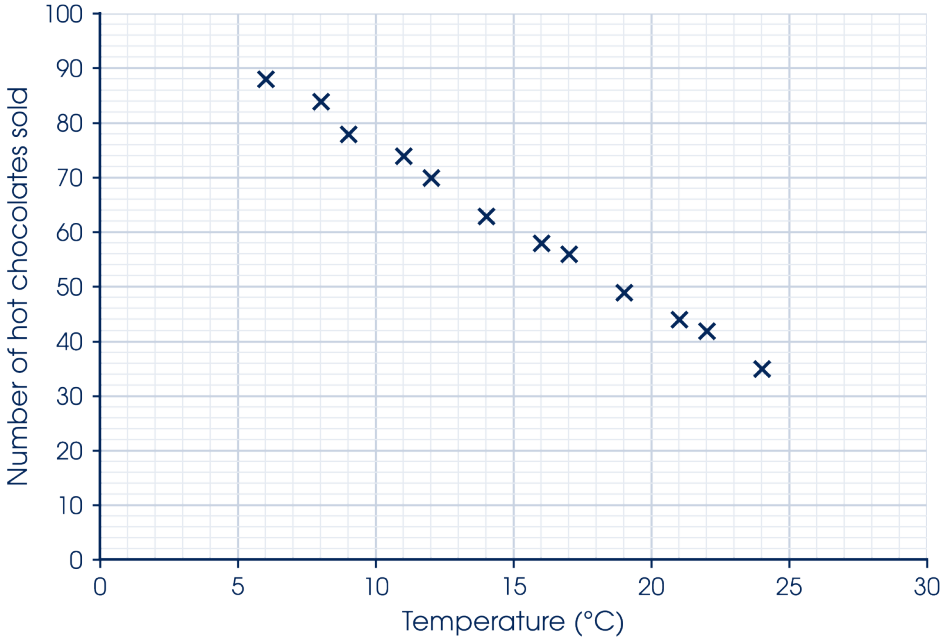
**7** Hannah invests £6500 in a savings account for 4 years.
The account pays 3.2% compound interest per year.
Work out the value of Hannah's investment at the end of 4 years.
Give your answer correct to the nearest penny.

£ ..... **(3)**

**[Question 7: 3 marks]**

**8** A café owner records the outside temperature at midday and the number of hot chocolates sold on 12 days.

The scatter graph shows this information.




(a) Describe the relationship between the temperature and the number of hot chocolates sold.

.....

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

(b) On another day the temperature was 15 °C.

Use a line of best fit to estimate the number of hot chocolates sold on this day.

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

**[Question 8: 3 marks]**

**9** The diagram shows a solid block of copper in the shape of a cuboid.

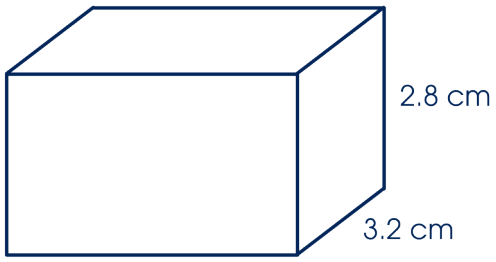



*Diagram NOT accurately drawn*

The density of copper is 8.96 g/cm$^3$.

Work out the mass of the block.

Give your answer correct to 3 significant figures.

..... g **(3)**

**[Question 9: 3 marks]**

**10** The table gives information about the time, $t$ minutes, that 55 students spent on their homework last night.

| Time ($t$ minutes) | Frequency |
|---|---|
| $0 < t \leq 10$ | 7 |
| $10 < t \leq 20$ | 14 |
| $20 < t \leq 30$ | 18 |
| $30 < t \leq 40$ | 11 |
| $40 < t \leq 50$ | 5 |

Work out an estimate for the mean time.

Give your answer correct to 1 decimal place.

..... minutes **(3)**

**[Question 10: 3 marks]**

**11** A ladder is 6.5 m long.

The ladder leans against a vertical wall on horizontal ground.

The foot of the ladder is 1.8 m from the bottom of the wall.

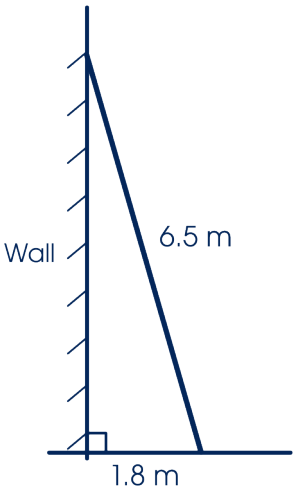



*Diagram NOT accurately drawn*

Work out how far up the wall the ladder reaches.

Give your answer correct to 1 decimal place.

..... m **(3)**

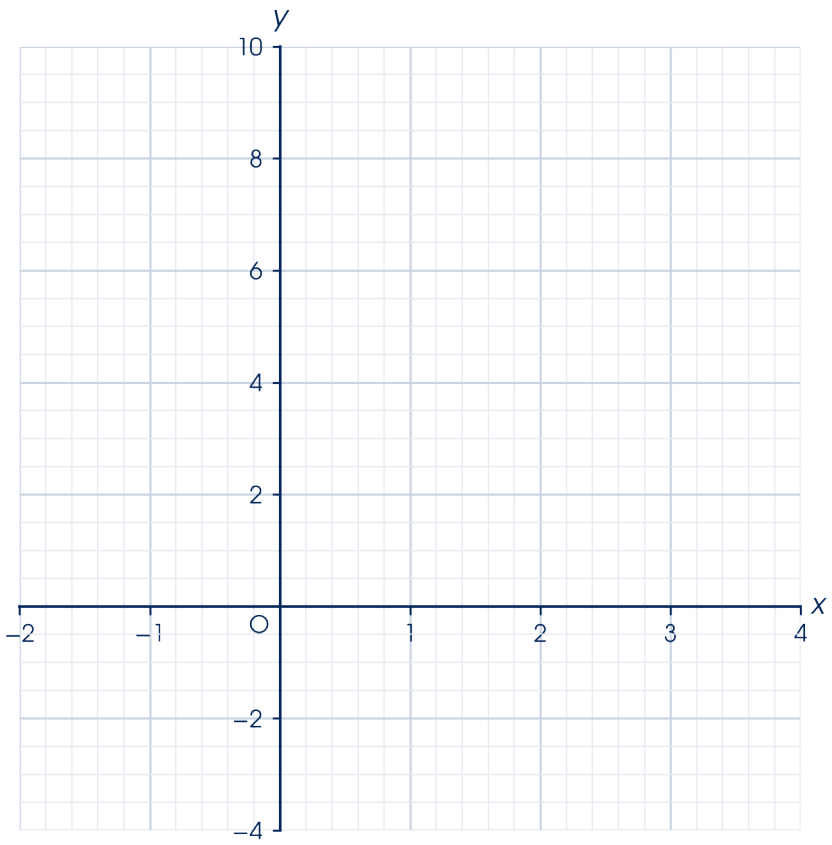
**[Question 11: 3 marks]**

**12** (a) Complete the table of values for $y = x^2 - 3x - 1$

| $x$ | −2 | −1 | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|---|
| $y$ | 9 | | −1 | | −3 | −1 | |

**(2)**

(b) On the grid, draw the graph of $y = x^2 - 3x - 1$ for values of $x$ from −2 to 4




**(2)**

(c) Use your graph to estimate the solutions of $x^2 - 3x - 1 = 0$

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

**[Question 12: 6 marks]**

**TOTAL FOR PAPER IS 40 MARKS**