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

Calculator Crossover Paper 6

GCSE Mathematics · Foundation and Higher

40 marks · 45 minutes · Calculator

1 (a) Write 1764 as a product of its prime factors.

Give your answer in index form.

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

(b) Use your answer to part (a) to explain why 1764 is a square number.

.....

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

[Question 1: 3 marks]

2 The distance from the Earth to the Sun is 1.496×10^8 km.

(a) Write 1.496×10^8 as an ordinary number.

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

(b) Light travels at a speed of 3.0×10^5 km per second.
Work out the time it takes light to travel from the Sun to the Earth.
Give your answer in seconds, in standard form, correct to 3 significant figures.

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

[Question 2: 3 marks]

3 Kai mixes red paint and white paint in the ratio 4 : 9 to make pink paint.
He makes 11.7 litres of pink paint.
How many more litres of white paint than red paint does he use?

..... litres **(3)**

[Question 3: 3 marks]

4 The stem and leaf diagram shows the times, in seconds, taken by 15 students to run 100 metres.

11	5 8 9
12	0 2 2 6 7
13	1 4 4 9
14	0 3 6

Key: 12 | 6 represents 12.6 seconds

(a) Find the median time.

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

(b) Work out the range of the times.

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

[Question 4: 2 marks]

5 (a) Solve $9x - 4 \leq 4x + 9$

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

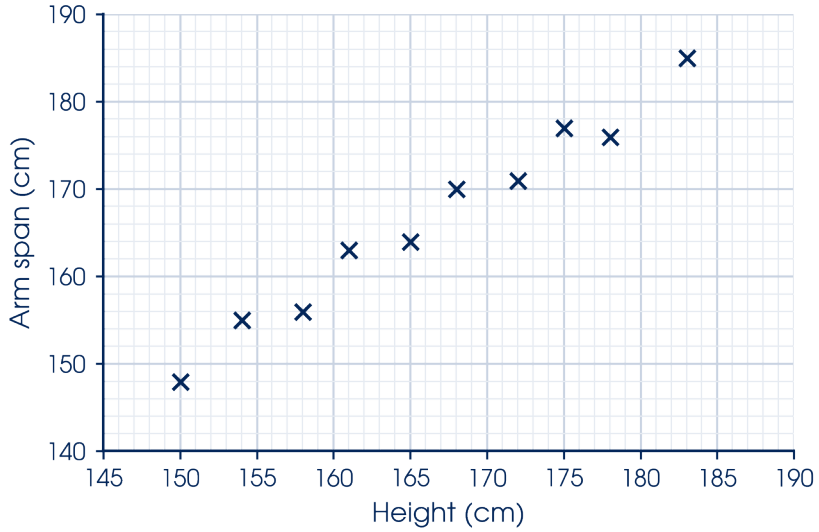
(b) n is an integer.

List all the values of n such that $-3 < 2n + 1 \leq 9$

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

[Question 5: 4 marks]

6 The scatter graph shows the height and the arm span of each of 10 adults.



(a) Describe the type of correlation shown on the scatter graph.

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

(b) Elif is 170 cm tall.

Use a line of best fit to estimate her arm span.

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

[Question 6: 3 marks]

7 A bag contains only red counters, green counters and white counters.

A counter is taken at random from the bag.

The probability that the counter is red is 0.24

The probability that the counter is green is 0.41

There are 84 white counters in the bag.

Work out the total number of counters in the bag.

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

[Question 7: 3 marks]

8 Brass is made by mixing copper and zinc.

A metal bar is made from 240 cm^3 of copper and 60 cm^3 of zinc.

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

The density of zinc is 7.13 g/cm^3.

Work out the density of the metal bar.

Give your answer correct to 2 decimal places.

..... g/cm^3 **(3)**

[Question 8: 3 marks]

9 Aisha has £3800 to invest for 5 years.

She can choose one of these two accounts.

Account A	Account B
2.9% per annum simple interest	2.7% per annum compound interest

Which account will give Aisha more interest after 5 years, and by how much?

You must show all your working.

.....

..... **(4)**

[Question 9: 4 marks]

10 At a cinema, adult tickets cost £a each and child tickets cost £c each.

4 adult tickets and 3 child tickets cost a total of £58.30

3 adult tickets and 5 child tickets cost a total of £61.05

Work out the cost of one adult ticket and the cost of one child ticket.

Adult ticket £.....

Child ticket £..... **(4)**

[Question 10: 4 marks]

11 A ladder of length 5.4 m leans against a vertical wall.

The foot of the ladder is on horizontal ground, 1.6 m from the wall.

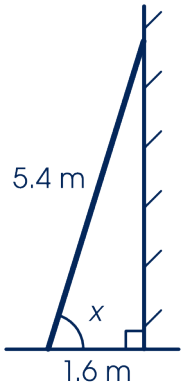


Diagram NOT accurately drawn

For the ladder to be safe, the angle x between the ladder and the ground must be between 70° and 80°.

Is the ladder safe?

You must show all your working.

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

[Question 11: 3 marks]

12 The diagram shows a sector OAB of a circle with centre O.

The radius of the circle is 9.4 cm and angle $AOB = 135°$.

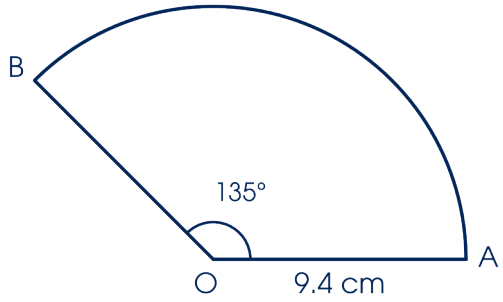


Diagram NOT accurately drawn

(a) Work out the area of the sector.

Give your answer correct to 1 decimal place.

..... cm^2 **(2)**

(b) Work out the perimeter of the sector.

Give your answer correct to 3 significant figures.

..... cm **(3)**

[Question 12: 5 marks]

TOTAL FOR PAPER IS 40 MARKS