

**GCSE (9 – 1) Mathematics**  
**J560/04 Paper 4 (Higher Tier)**

**Question Set 4**

1 Carol makes birthday cards.  
Each card takes the same amount of time to make.

She makes 3 cards in 48 minutes.  
She has an order for 80 cards.

Can she complete this order in 3 days if she works 8 hours each day?  
Show how you decide.

..... because .....

..... [5]

2 Use the formula  $F = \frac{s}{\sqrt{tm}}$  to find the value of  $F$  when

$$s = 5.8 \times 10^6$$

$$t = 4.1 \times 10^8$$

$$m = 3.7 \times 10^{-2}.$$

Give your answer in standard form, correct to 2 significant figures.

..... [4]

3 At a railway station, trains are either eastbound or westbound.  
An eastbound train leaves the station every 25 minutes.  
A westbound train leaves the station every 45 minutes.

An eastbound train and a westbound train both leave the station at 8 am.

When is the next time that two trains leave the station together?

..... [4]

4

Multiply out and simplify.

$$(4x + y)(x - 3y)$$

..... [3]

5

A bag of sweets contains only mints, sherberts and toffees.

The ratio of the number of mints to sherberts is 2 : 3.

The ratio of the number of sherberts to toffees is 7 : 5.

What fraction of the sweets are sherberts?

..... [3]

6 (a) Here is function A.



(a) A number,  $k$ , is input into function A.  
The output is also  $k$ .

Find the value of  $k$ .

(a)  $k = \dots\dots\dots$  [3]

(b) The output of function A is  $y$ .

Write an algebraic expression, in terms of  $y$ , for the input of function A.

(b)  $\dots\dots\dots$  [2]

(c) The diagram shows a composite function with an input,  $n$ , and an output of 96.

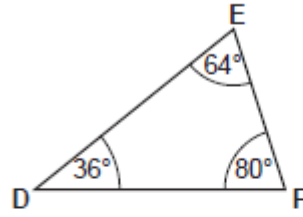
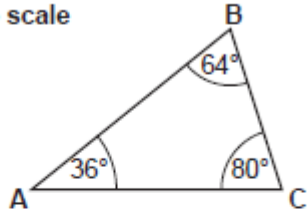


Find the value of  $n$ .

(c)  $n = \dots\dots\dots$  [2]

- 7 (a) Are these two triangles definitely congruent?  
Give a reason.

Not to scale



..... because .....

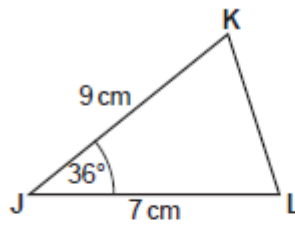
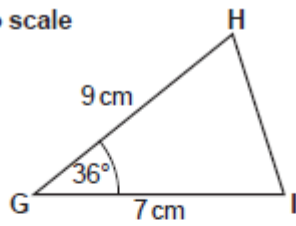
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.....

..... [1]

- (b) Prove that these two triangles are congruent.

Not to scale



.....

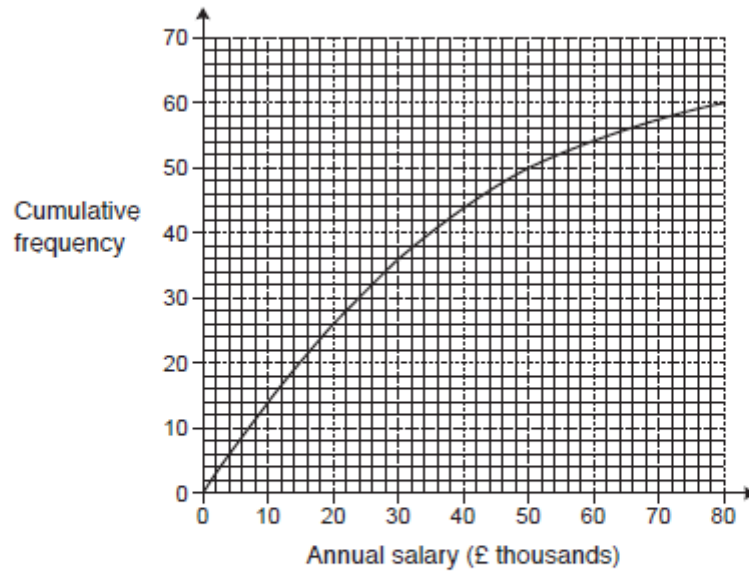
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.....

..... [3]

- 8 (a) The cumulative frequency graph summarises the annual salary,  $p$  (£ thousands), of the 60 workers in a factory.



- (a) Use the graph to estimate the median annual salary.

(a) £ ..... thousands [1]

- (b) Complete this cumulative frequency table.

Annual salary, $p$ (£ thousands)	Cumulative frequency
$p \leq 10$	
$p \leq 20$	
$p \leq 30$	
$p \leq 50$	
$p \leq 80$	

[2]

(c) Use the information in the cumulative frequency table to calculate an estimate of the mean annual salary.

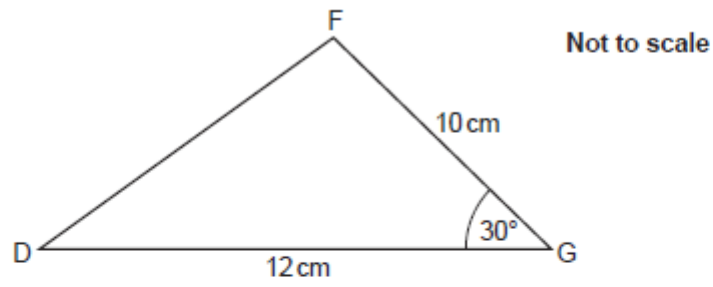
(c) £ ..... thousands [5]

(d) Explain why your estimate of the median is more reliable than your estimate of the mean.

.....  
..... [1]

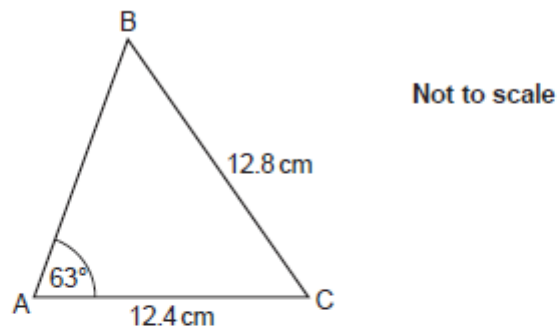


- 9 (a) Calculate length DF in this triangle.



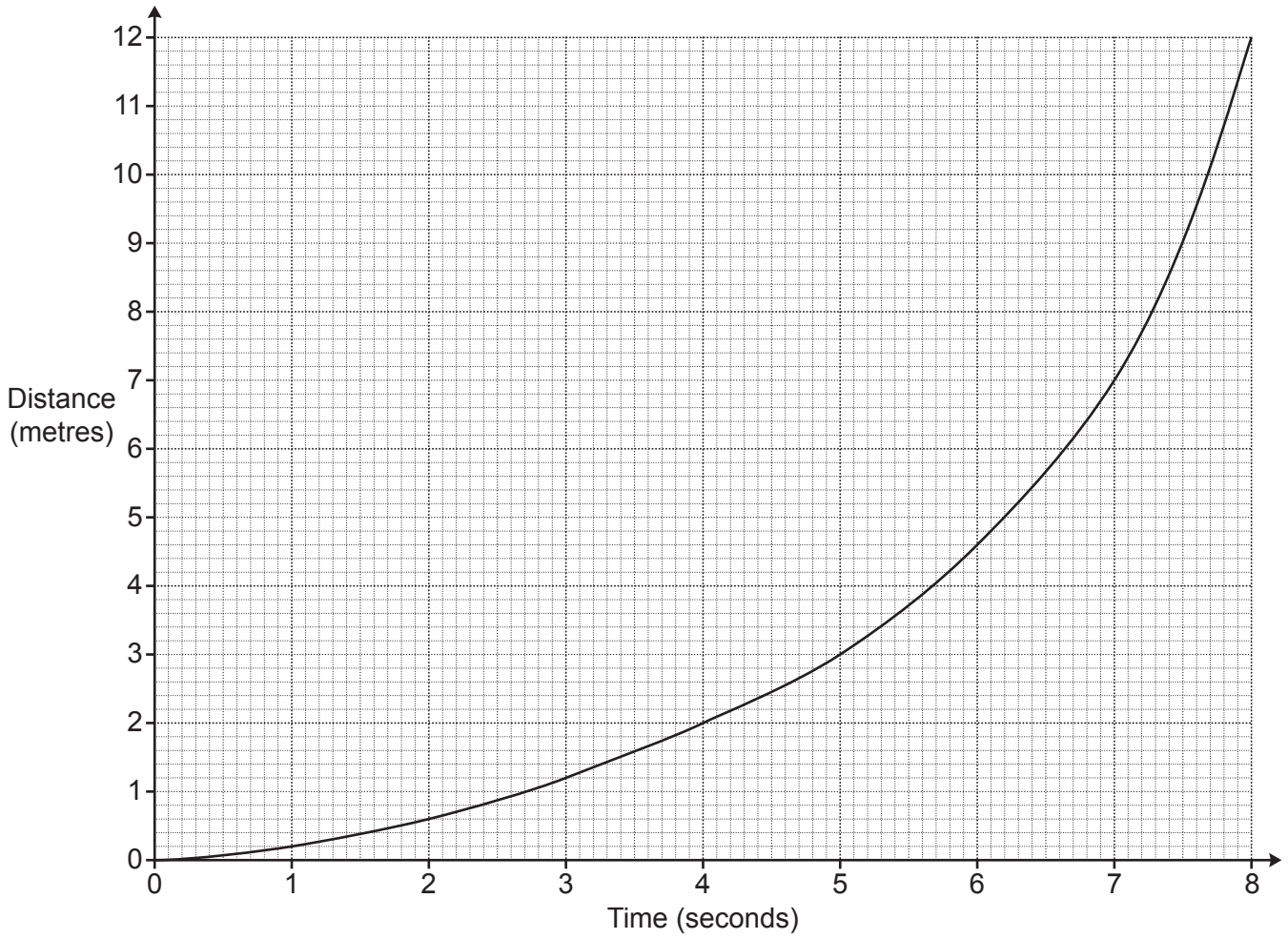
(a) ..... cm [3]

- (b) Calculate angle ACB in this triangle.



(b) ..... ° [4]

10 The graph shows the distance travelled by a particle over 8 seconds.



Estimate the speed of the particle at 5 seconds.

..... m/s [4]

**Total Marks for Question Set 4: 50**

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