

[MATHS(INT2) P1 - EX 2003-2004]

Intermediate 1

Time: 55 minutes

NATIONAL

Mathematics

QUALIFICATIONS

Question Paper 2 (Units 1, 2, 3)

Fill in these boxes and read what is printed below.

Full name of school or college

Town

First name and initials

Surname

Date of birth

Day Month Year

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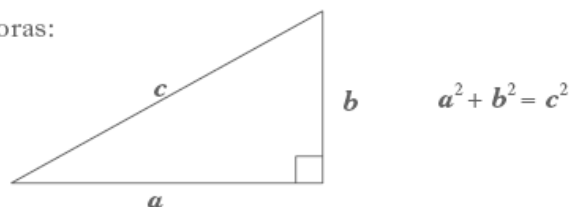
- 1 Answer as many questions as you can.
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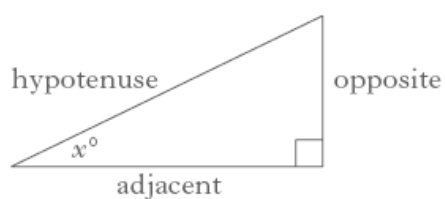
FORMULAE LIST

Circumference of a circle: $C = \pi d$
Area of a circle: $A = \pi r^2$
Curved surface area of a cylinder: $A = 2\pi rh$

Theorem of Pythagoras:



Trigonometric ratios
in a right angled
triangle:



$$\tan x^\circ = \frac{\text{opposite}}{\text{adjacent}}$$
$$\sin x^\circ = \frac{\text{opposite}}{\text{hypotenuse}}$$
$$\cos x^\circ = \frac{\text{adjacent}}{\text{hypotenuse}}$$

Marks

1. Caroline applies for the job advertised below.

<p>CLERICAL ASSISTANT REQUIRED <i>for general office duties.</i> 5 days a week. Company pension scheme. HOURS: 8.00 am – 12.30 pm 1.30 pm – 5.00 pm PAY: £3.60 per hour</p>
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- (a) Calculate how much she would earn in one week.

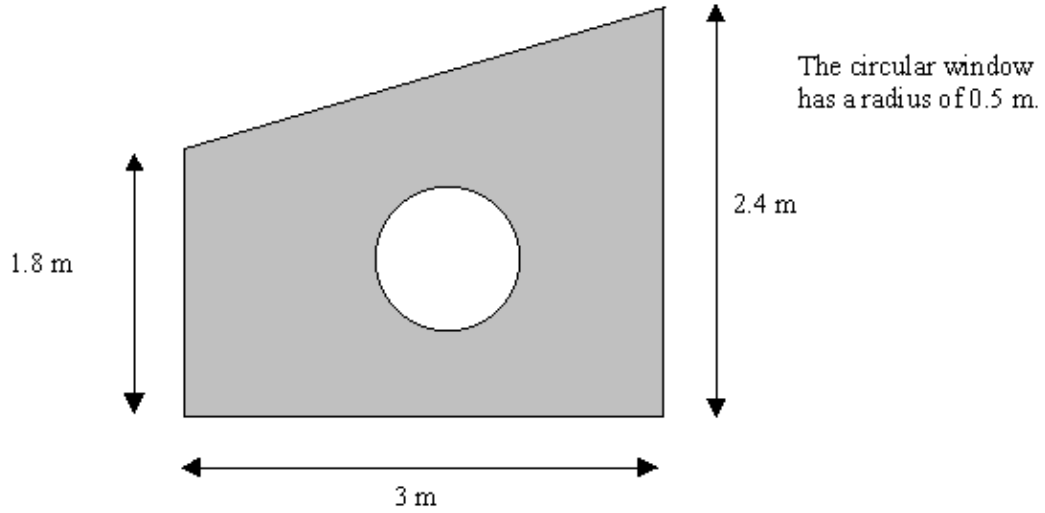
(3)

- (b) The company pay overtime at a rate of time-and-a-half.
How much money would Caroline get if she did 3 hours and 30 minutes of overtime?

(2)

Marks

2. A wall is going to be painted red. It has a circular window in the centre. Calculate the area that is to be painted.



(5)

Marks

3.

GALLOWGATE BANK

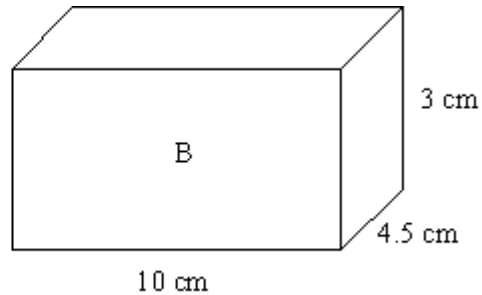
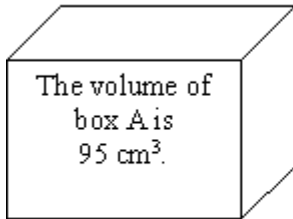
Amount	Annual rate of interest
Up to £500	2%
£501 - £1000	3%
£1001 - £5000	4%
£5000 - £10000	5%

Rashid puts £1200 into the Gallowgate Bank.
Calculate the interest that he should have received after 2 years and 6 months.

(4)

4.

A manufacturer currently uses box A to pack its products.
Due to a change in their products, they need a box with a volume that is at least 40% bigger than box A.



(a) Calculate the volume of box B.

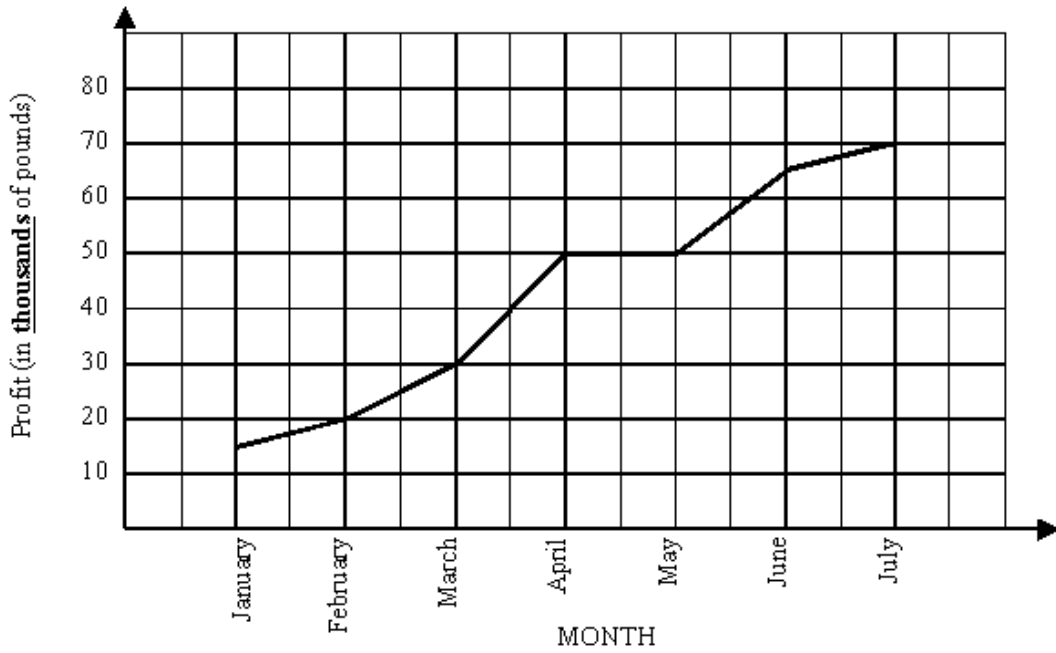
(1)

(b) Does box B satisfy their requirements.
You must show your working to justify your answer.

(3)

Marks

5. The graph below shows the profits made, by a company, at the end of each month.



(a) How much profit did the company make in June?

(1)

(b) During which month did their profits rise the most?

(1)

(c) Describe the trend of the profits.

(1)

Marks

6. The weight, in grams, of ten mobile phones are listed below

99 77 133 92 106 92 84

Find the mean weight.

(2)

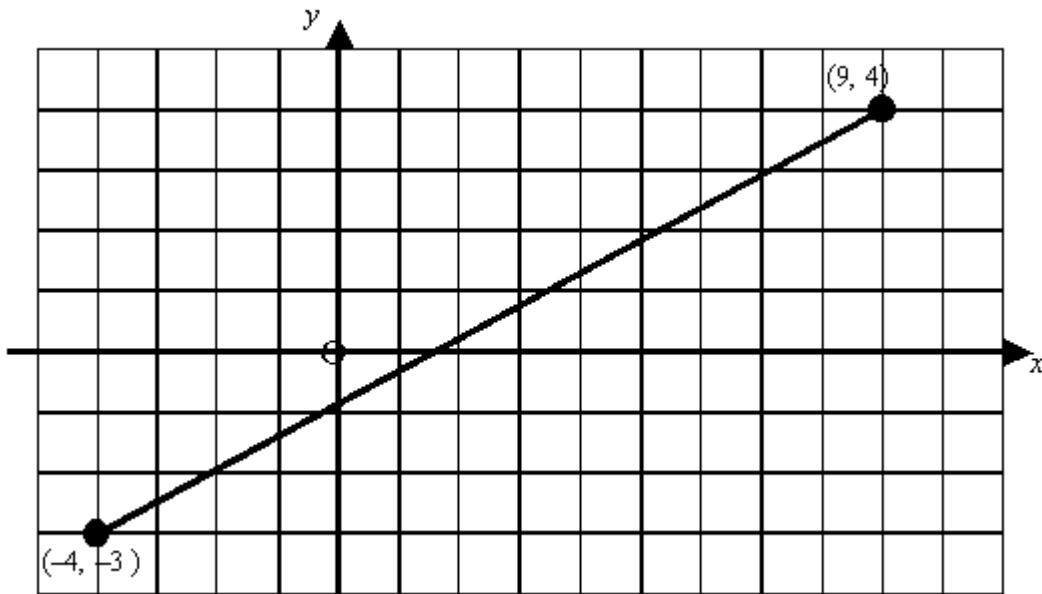
7. The diagram shows the points $(-4, -3)$ and $(9, 4)$.

Calculate the distance between the two points.

Do not measure with a ruler.

Round your answer to 2 decimal places.

You must show your working.



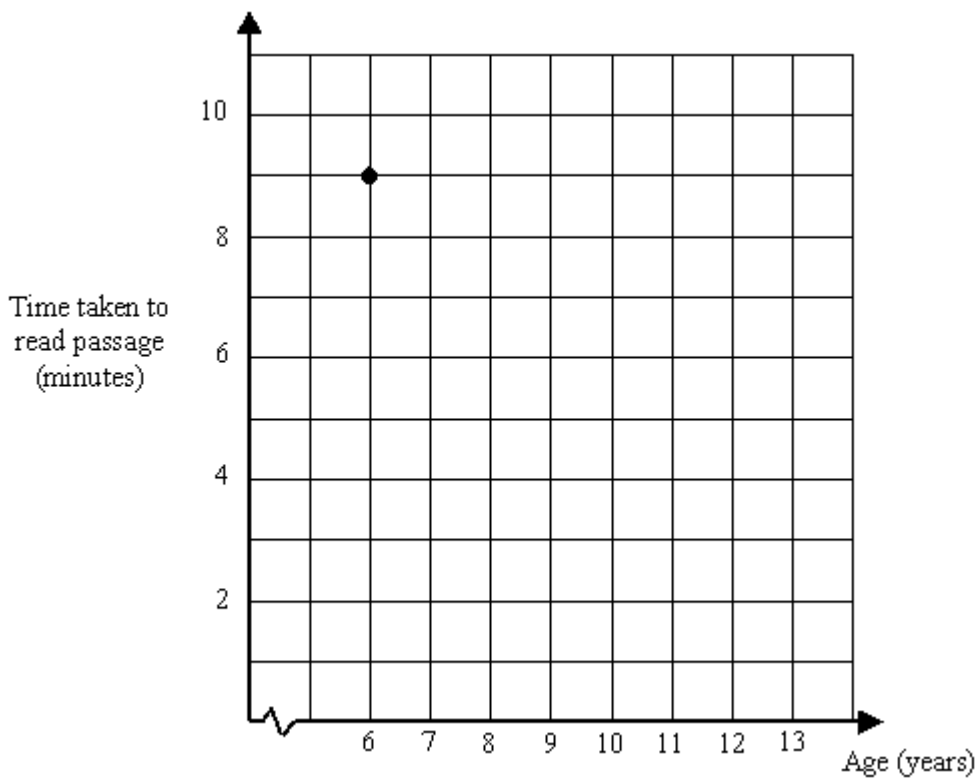
(4)

Marks

8. A teacher records the time it takes ten pupils of various ages to read the same passage of from a book.
The results are shown in this table.

Pupil	A	B	C	D	E	F	G	H	I	J
Age (years)	6	7	6	9	10	9	11	12	7	10
Time (minutes)	9	9	8	7	5	6	5	4.5	7	6

- (a) Display these results on the scattergraph below.
Pupil A has already been entered.



- (b) Draw a line of best fit for the points on the graph.
- (c) Use the graph to estimate the time it will take an 8 year old to read the passage in the book.

(3)

(1)

(1)

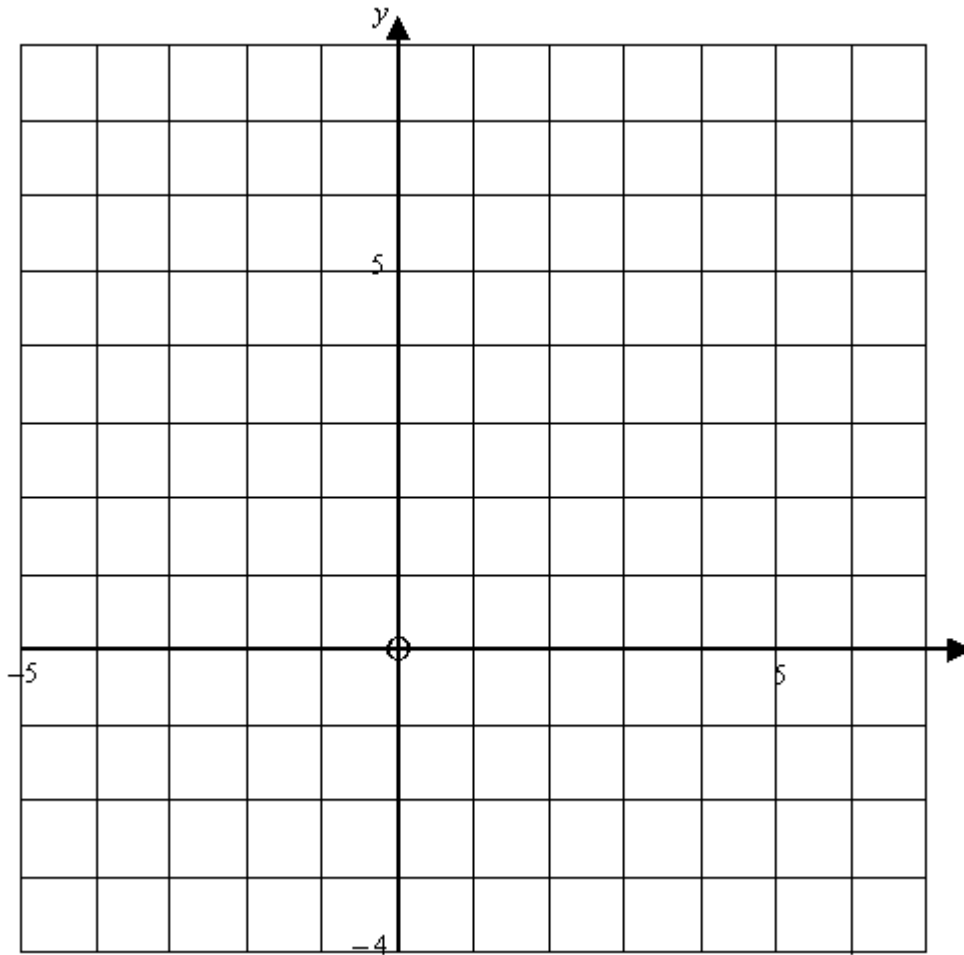
Marks

9. (a) Complete the table for $y = 3x - 1$.

x	-1	0	3
y			

(2)

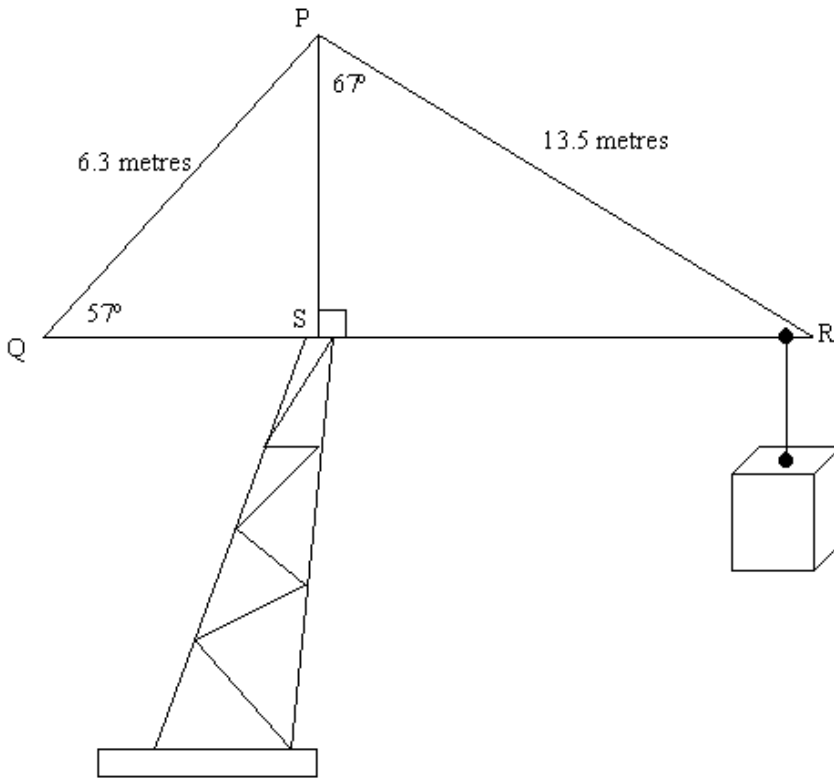
(b) Draw the line $y = 3x - 1$ on the grid below.



(2)

Marks

10. The diagram below shows a crane.
PQ = 6.3 metres, PR = 13.5 metres, $\angle PQS = 57^\circ$ and $\angle SPR = 67^\circ$.
Calculate the length of QR, the horizontal part of the crane shown below.



(4)

Marks

11. The current, I amps, in an electric circuit can be calculated using this formula

$$I = \sqrt{\frac{P}{R}}$$

where P is the power in Watts and R is the resistance in ohms.

- (a) Find the current, I amps, when $P = 36$ Watts and $R = 16$ ohms.

(3)

- (b) Andrew's circuit has a current of 2 amps and a resistance of 23 ohms.
Calculate the power in his circuit.

(2)

Marks

ADDITIONAL SPACE FOR ANSWERS

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Marks

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Intermediate 1

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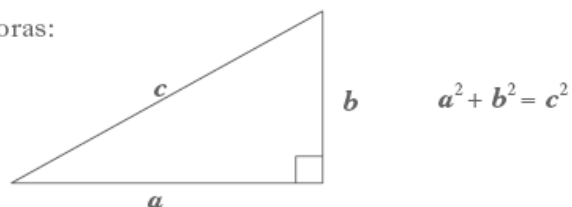
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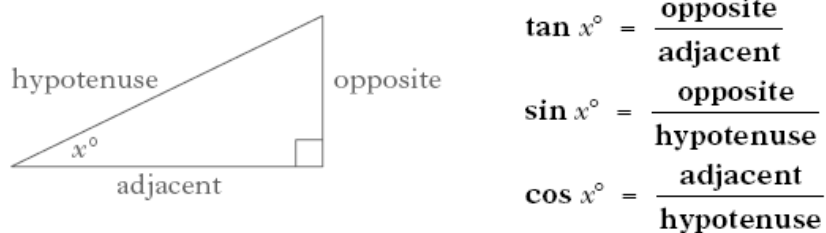
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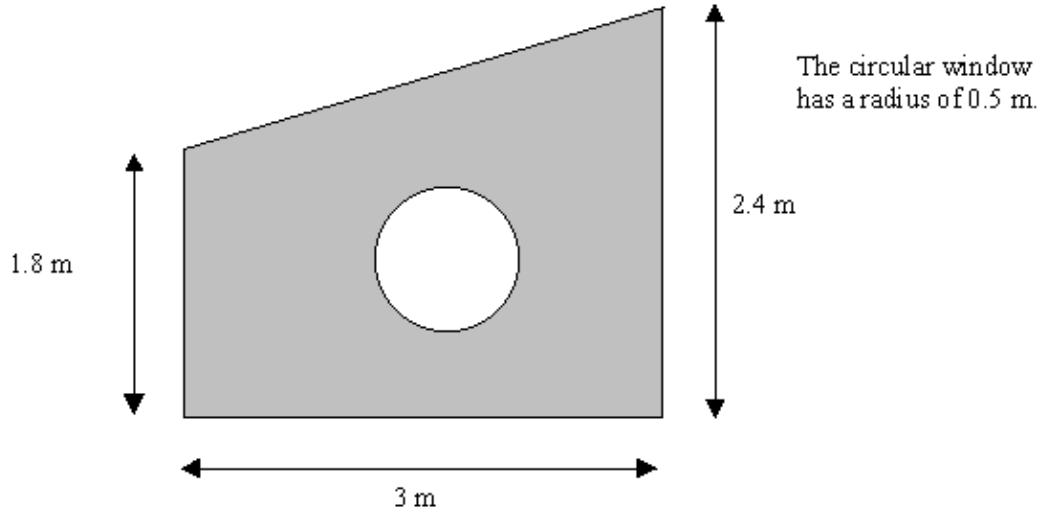
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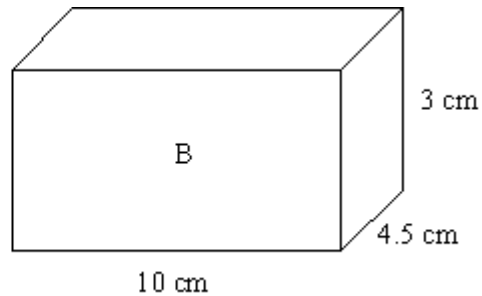
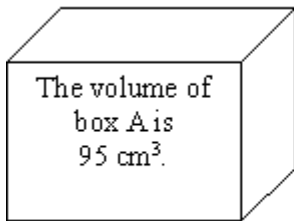
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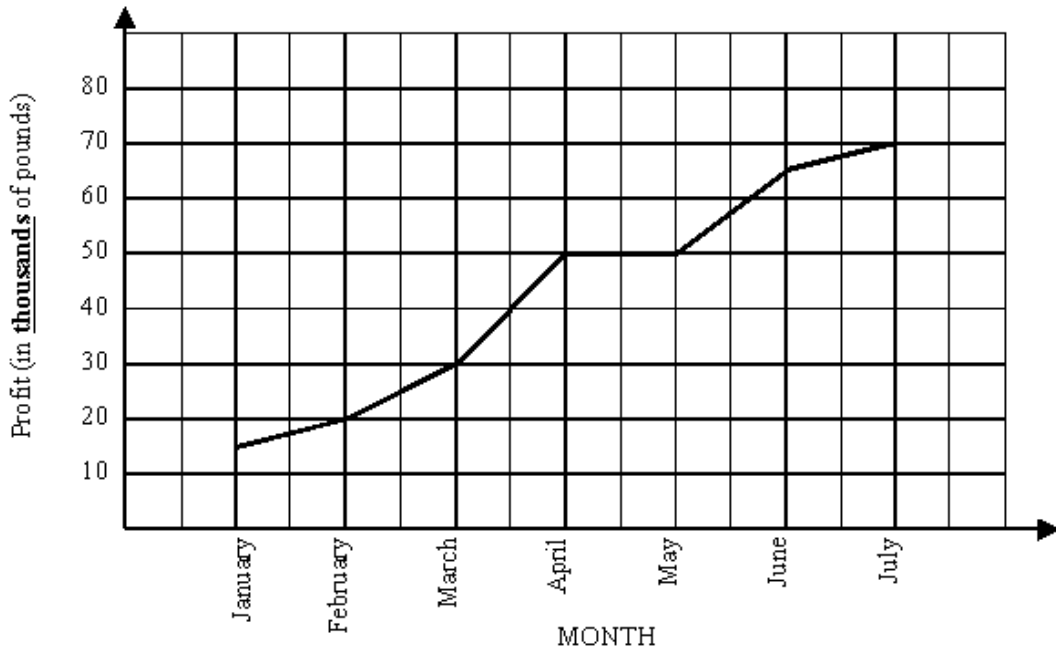
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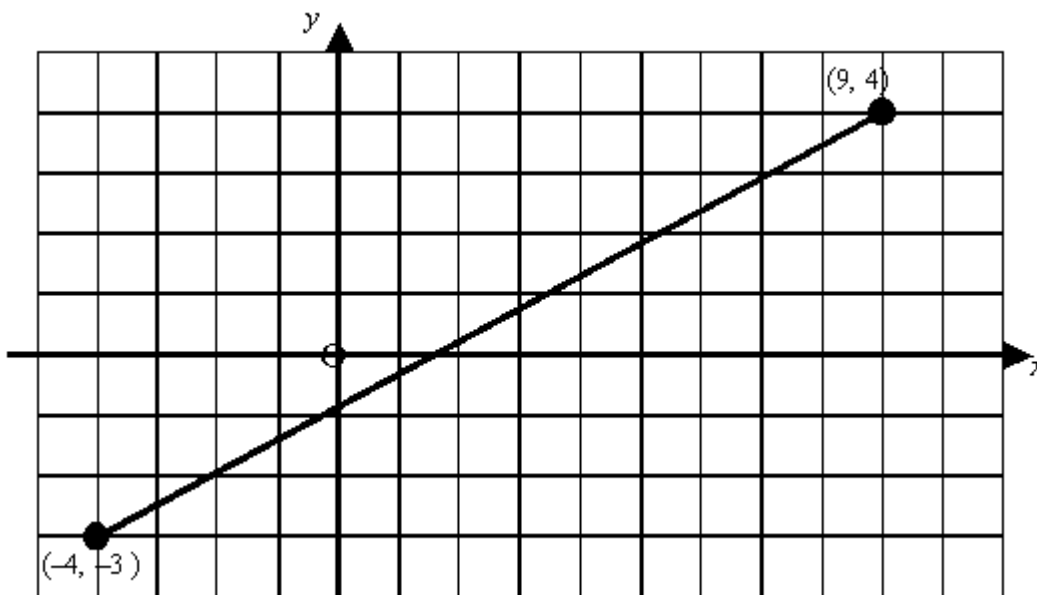
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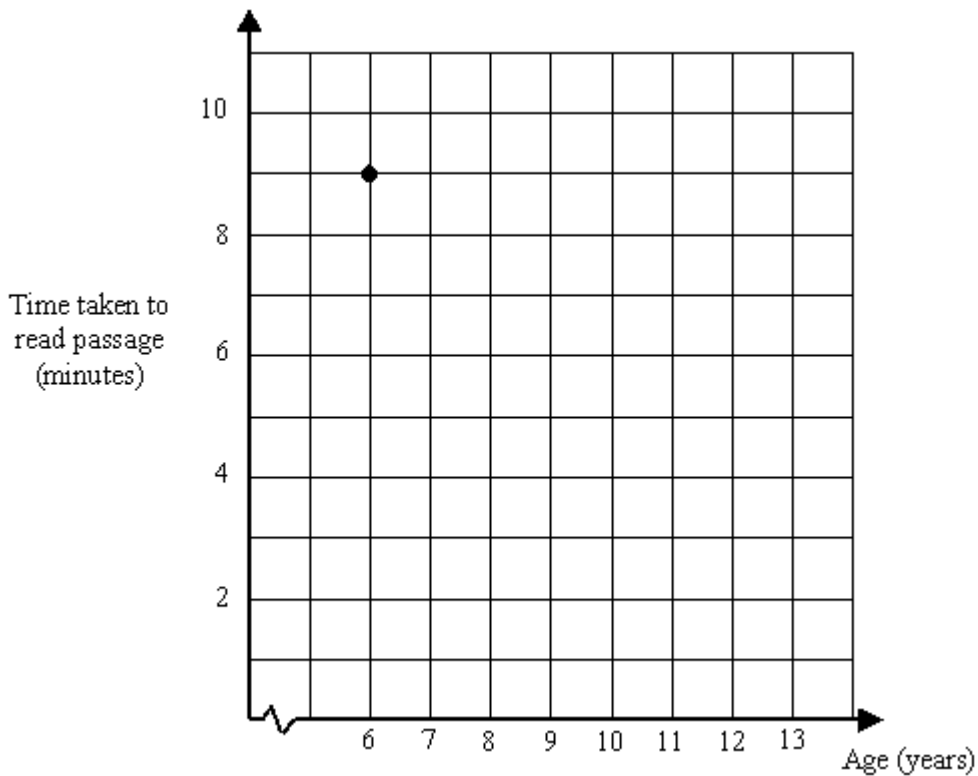
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(3)

(1)

(1)

Marks

9. The table below shows the monthly repayments to be made, with and without loan protection, when money is borrowed from the Gallowgate Bank.

Amount of loan	With Loan Protection			Without Loan Protection		
	120 months	240 months	300 months	120 months	240 months	300 months
£75 000	£896.85	£611.92	£562.47	£1031.38	£703.71	£646.83
£50 000	£597.90	£407.95	£374.98	£687.59	£469.14	£431.22
£40 000	£491.76	£342.18	£316.82	£565.52	£393.51	£364.35
£30 000	£368.82	£256.64	£237.62	£424.14	£295.13	£273.26
£25 000	£320.60	£229.58	---	£368.69	£264.02	---
£20 000	£256.48	£183.67	---	£294.95	£211.22	---

Paul borrows £30 000 over 240 months **without loan protection**.

- (a) State his monthly payment.
- (b) Calculate his total repayment.
- (c) How much will this loan cost Paul?

(1)

(1)

(2)

Marks

- 10.** Michelle is a saleswoman.
She is paid a basic rate of £5.20 per hour.
She gets 6% commission on all sales.
One week Michelle worked for 35 hours and sold £4 500 worth of goods.

(a) Calculate Michelle's gross pay.

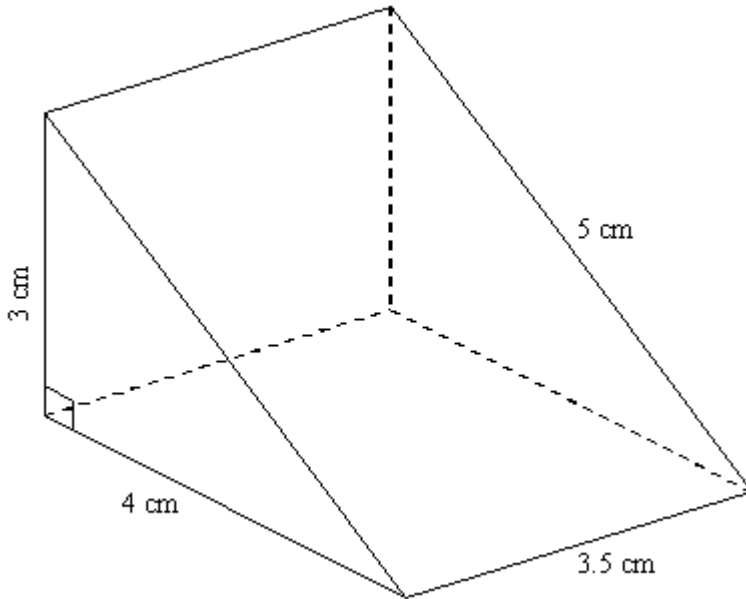
(3)

(b) For that week Michelle pays £86 income tax, £25 National Insurance and £27 towards her pension fund.
Calculate her net pay.

(2)

Marks

11. This is a triangular prism.

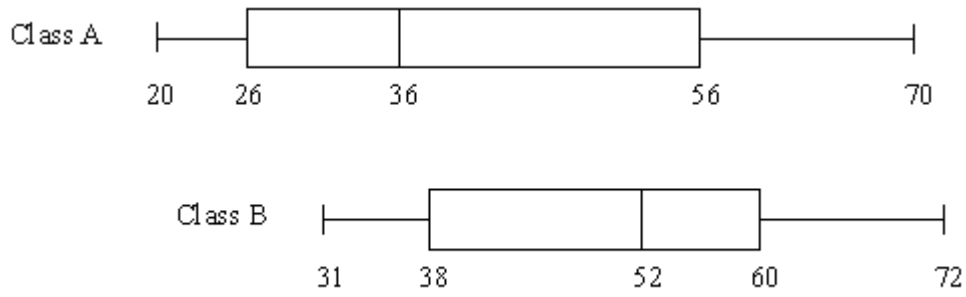


Accurately draw the net of the triangular prism.

(2)

Marks

12. The boxplots below compare the results of two primary school classes in a recent maths test.



Which class performed better in the test.

Give reasons for your answer.

2

Marks

ADDITIONAL SPACE FOR ANSWERS

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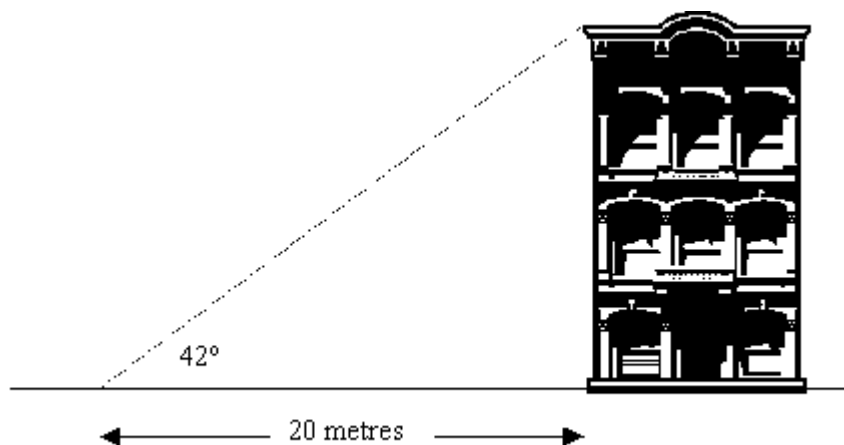
Marks

ADDITIONAL SPACE FOR ANSWERS

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Additional Questions

- extra** Greig stands 20 metres from the base of a building.
- 1.** He measures the angle of elevation to the top of the building to be 42° .
Calculate the height of the building.



3