

Paper 2 and Paper 3 Preparation Paper

AQA - Higher
Very High Chance



Corbettmaths

You will need a calculator

Ensure you have: Pencil, pen, ruler, protractor, pair of compasses and eraser

Guidance

1. Read each question carefully before you begin answering it.
2. Don't spend too long on one question.
3. Attempt every question.
4. Check your answers seem right.
5. Always show your workings

Revision for this test

www.corbettmaths.com/contents

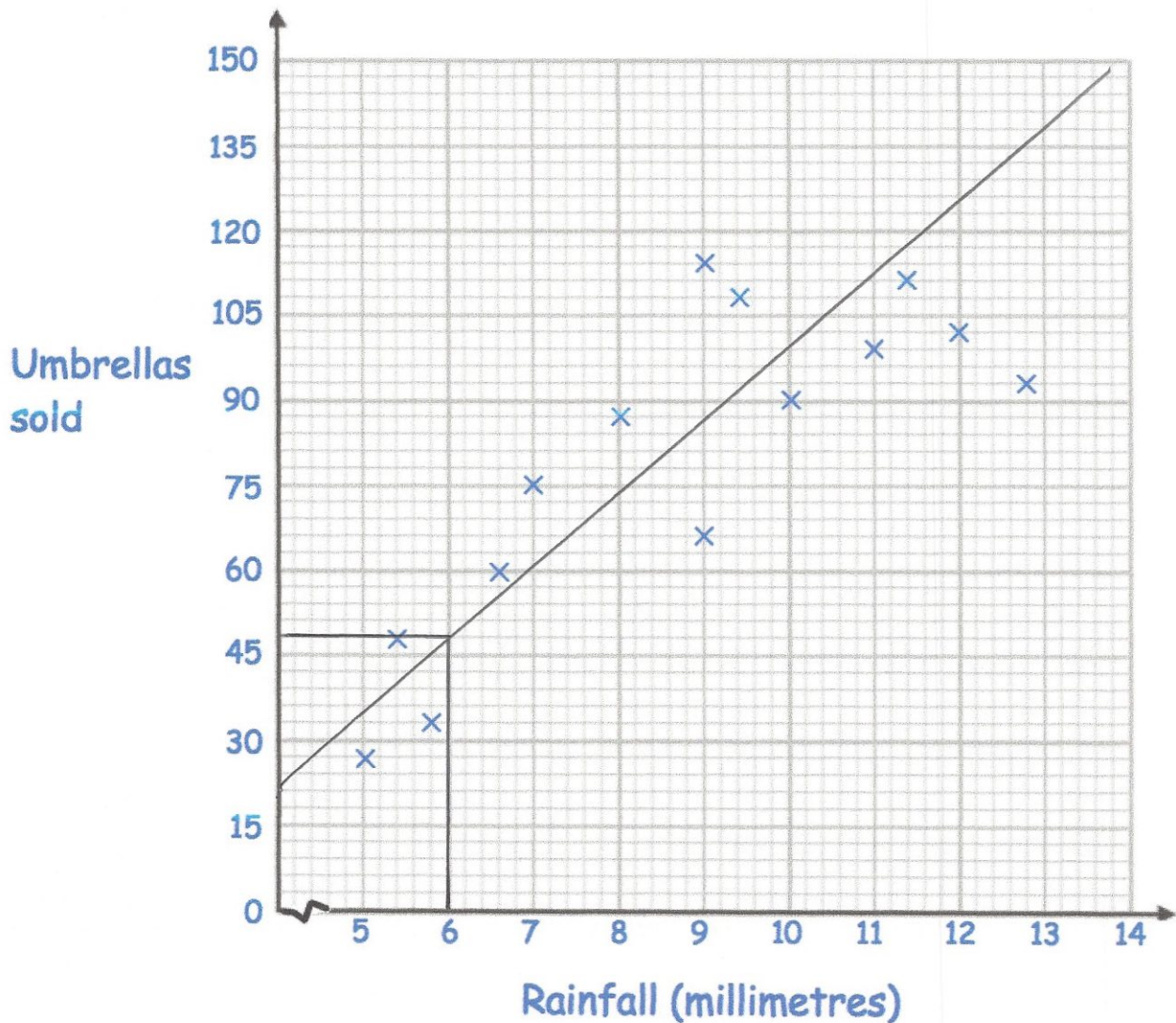


Question	Topic	Video number
1	Scatter Graphs	165, 166
2	Conversion Graphs	151, 152
3	Constructions	72, 78, 79, 80, 70
4	Loci	75, 76, 77
5	Pie Charts	163, 164
6	LCM/HCF	218, 219
7	Product Rule for Counting	383
8	Changing the Subject	7, 8
9	Drawing Linear Graphs	186
10	Currency	214a
11	Percentages	233, 235
12	Compound Interest	236
13	Error Intervals	377
14	Angles: Parallel Lines	25
15	Bearings	26, 27
16	Angles: Polygons	32
17	Reverse Percentages	240
18	Expanding 3 Brackets	15
19	Pythagoras	257, 259
20	Quadratic Graphs	264
21	Trigonometry	329, 330, 331
22	Rotations	275
23	Circle Theorems	64, 65, 66
24	Travel Graphs	171
25	Speed, Distance, Time	299
26	Density	384
27	Estimated Mean	55
28	Tree Diagrams	252
29	Histograms	157, 158, 159
30	Similar Shapes (Area/Volume)	293a, 293b

Question	Topic	Video number
31	Limits of Accuracy	183, 184
32	Factorising	117
33	Factorising Quadratics	118, 119, 120
34	Solving Quadratics	266
35	Quadratic Formula	267
36	nth Term	288
37	Quadratic nth term	388
38	Equations	110, 113, 114, 115
39	Graphical Inequalities	182
40	Quadratic inequalities	378
41	Equation of a Circle	12
42	Rates of Change	309a, 309b
43	Algebraic Fractions	21, 22, 23, 24
44	Functions	369, 370
45	Iteration	373
46	Equation of a Tangent	372
47	Sine Rule/Cosine Rule	333
48	$\frac{1}{2}ab\sin C$	337
49	Circle Theorems Proofs	66
50	Perpendicular Graphs	196, 197
51	Vectors	353
52	3D Pythagoras	259, 332
53	Volume of Cone/Pyramid/Sphere	359, 360, 361
54	Conditional Probability	247
55	Congruent Triangles	67
56	Algebraic Proof	365
57	Simultaneous Equations (Non-linear)	298

A shop sells umbrellas.

The scatter graph shows information about the number of umbrellas sold each week and the rainfall that week, in millimetres.



(a) Describe the relationship between the rainfall and umbrellas sold.

As the rainfall increases, the number of umbrellas sold increases.

(1)

(b) What is the greatest amount of rainfall in one week?

12.8 mm

(1)

In another week, there was 6mm of rain.

(c) Estimate the number of umbrellas sold.

* may vary due to lines
of best fit.

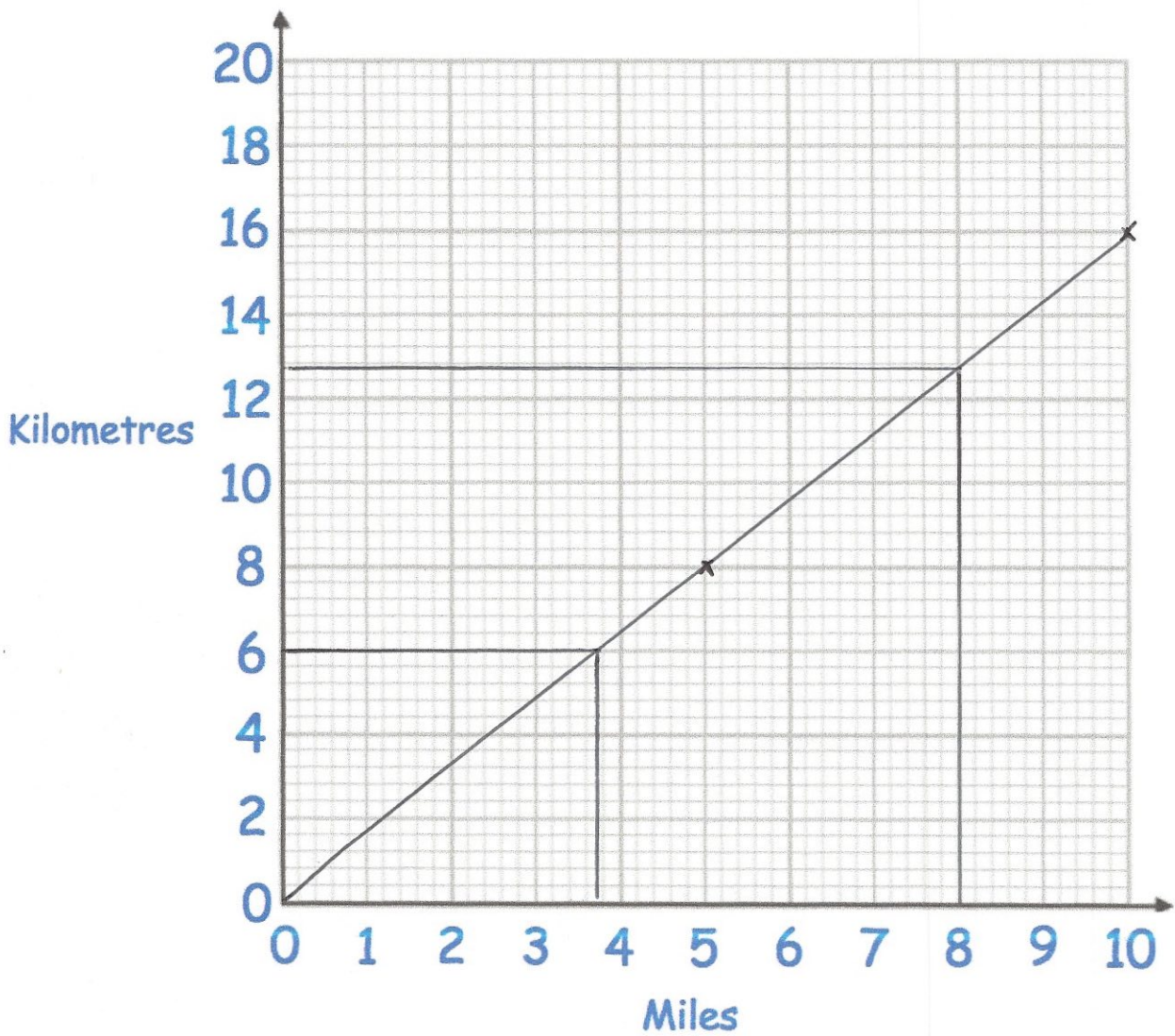
48
.....
(2)

(d) Explain why it may **not** be appropriate to use your line of best fit to estimate the number of umbrellas sold in a week with 25mm of rainfall.

It is beyond the range of the data.
It is extrapolation, therefore unreliable.
.....
(1)

2

(a) Use the fact 5 miles = 8 kilometres to draw a conversion graph on the grid.



(2)

Use your graph to convert

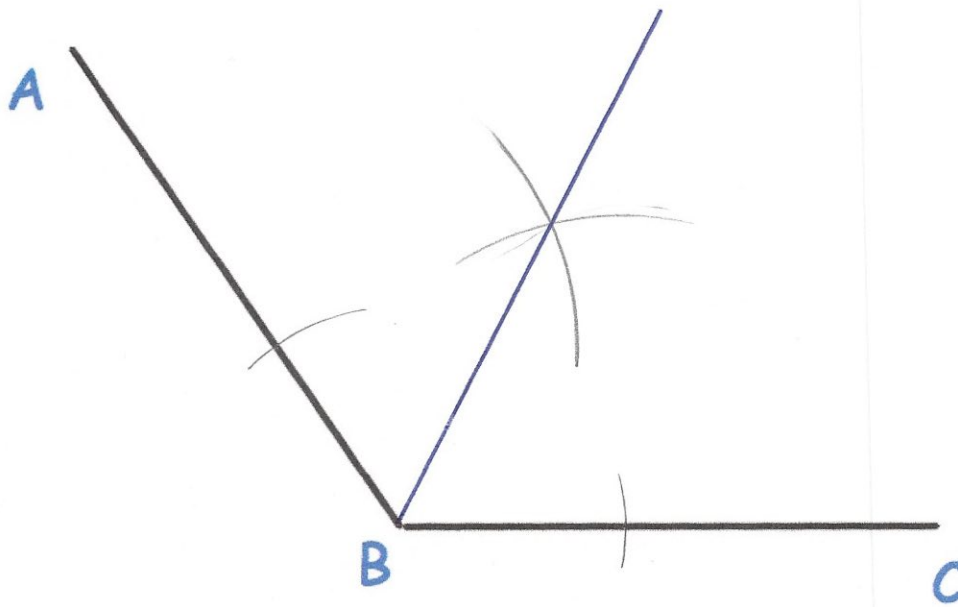
(b) 8 miles to kilometres

12.7 km
or 12.8 etc.
.....km
(1)

(c) 6 kilometres to miles

3.75 miles
.....miles
(1)

3. Using ruler and compasses, construct the bisector of angle ABC.



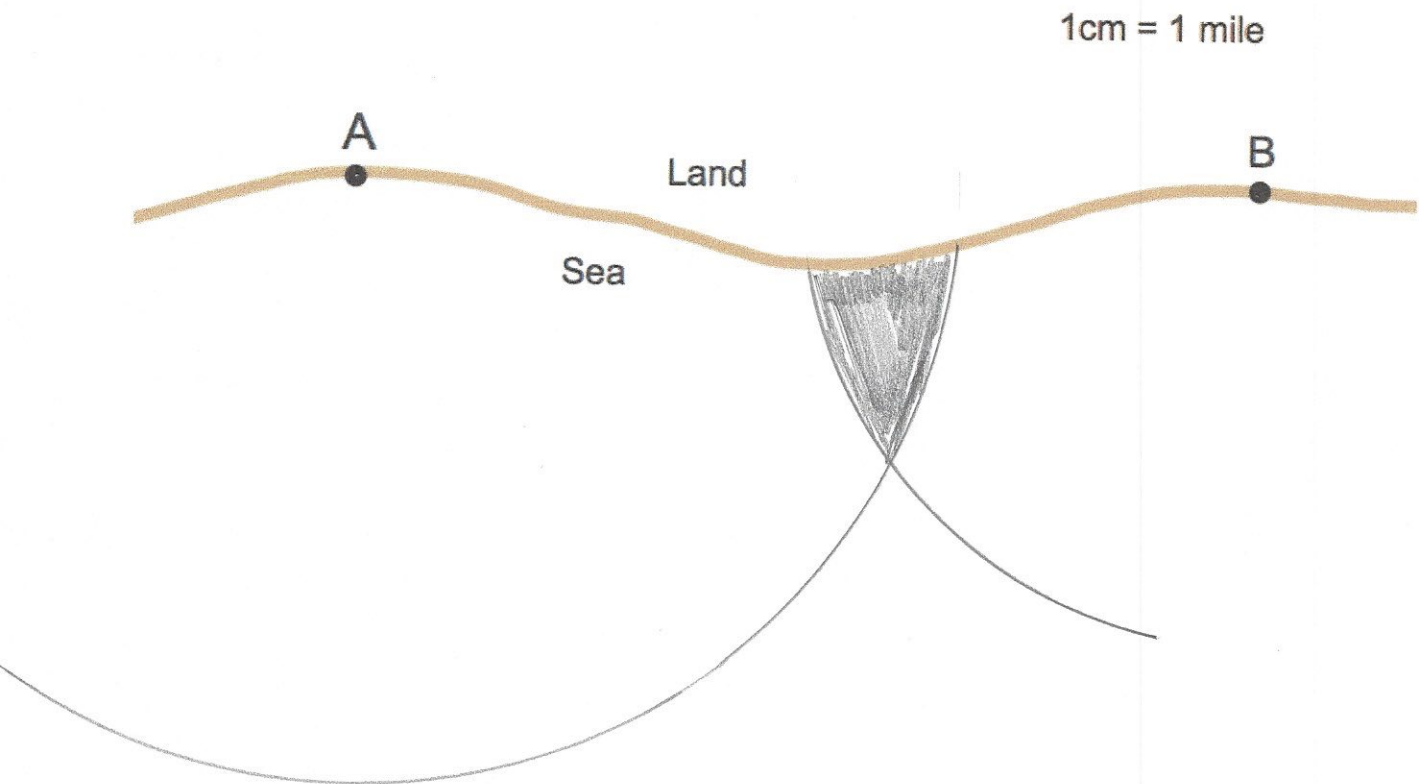
(2)

5
4
The diagram shows two lighthouses.

A boat is within than 8 miles of lighthouse A.

The same boat is within 6 miles of lighthouse B.

Shade the possible area in which the boat could be.



(2)

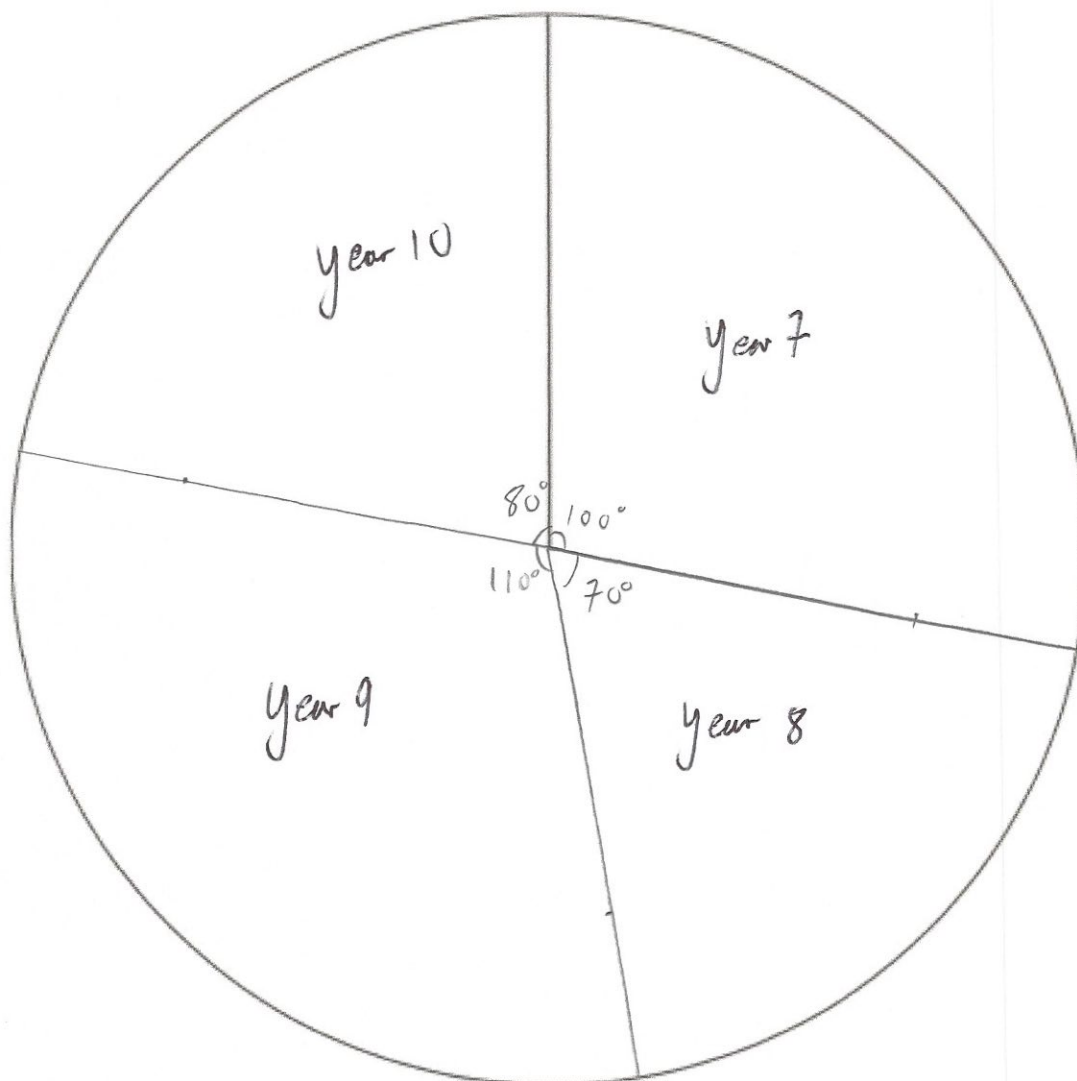
The table gives information about the number of students in years 7 to 10.

Year	Frequency	Angle
7	200 $\times 0.5$	100°
8	140 $\times 0.5$	70°
9	220 $\times 0.5$	110°
10	160 $\times 0.5$	80°

720

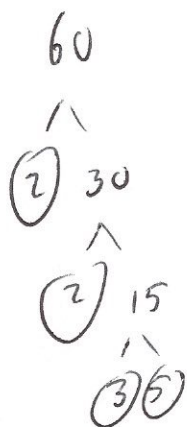
$$360 \div 720 = 0.5^\circ \text{ per person}$$

Draw an accurate pie chart to show this information.



6

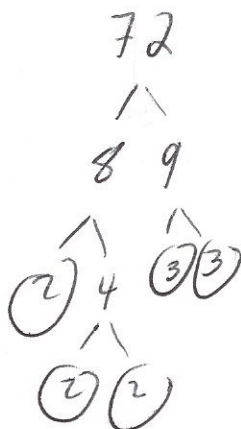
Find the Lowest Common Multiple (LCM) of 60 and 72.



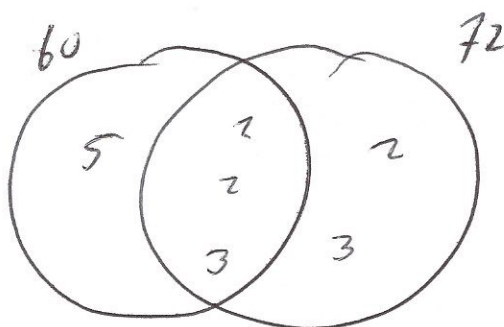
$$60 = 2 \times 2 \times 3 \times 5$$

360

(2)



$$72 = 2 \times 2 \times 2 \times 3 \times 3$$



$$LCM = 5 \times 2 \times 2 \times 3 \times 2 \times 3 = 360$$

7

Jim picks a five digit even number.

The second digit is less than 8.

The fourth digit is a square number The first digit is a cube number.

How many different numbers could he pick?

1 st	2 nd	3 rd	4 th	5 th
2	8	10	3	5
1, 8	0-7		1, 4, 9	even

$$2 \times 8 \times 10 \times 3 \times 5$$

2400

(3)

8

Make v the subject of the formula.

$$s = \frac{1}{2}(u + v)t$$

$$\times 2 \quad \times 2$$

$$2s = (u + v)t$$

$$\div t \quad \div t$$

$$\frac{2s}{t} = u + v$$

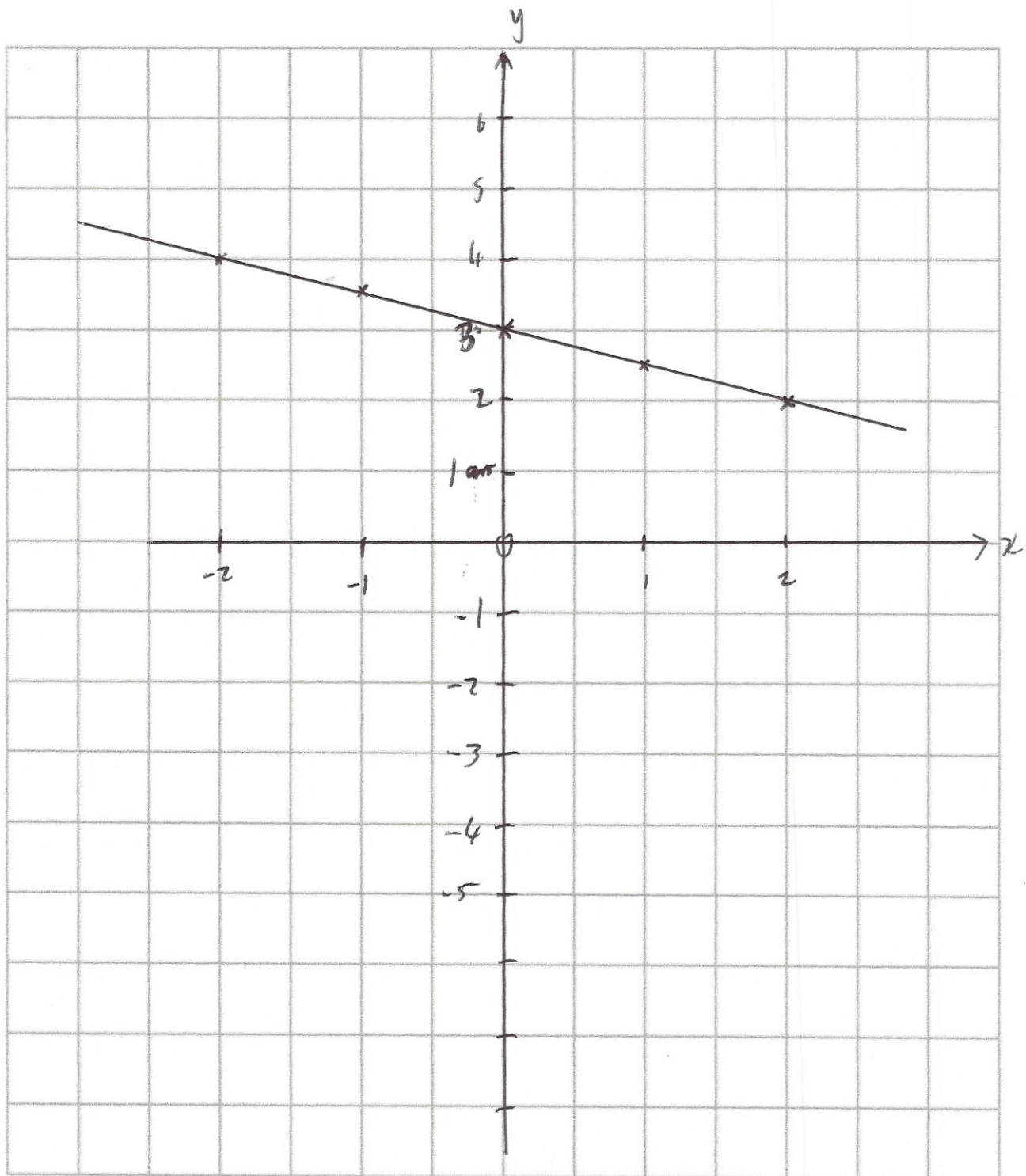
$$-u \quad -u$$

$$\frac{2s}{t} - u = v$$

$$v = \frac{\frac{2s}{t} - u}{(3)}$$

On the grid, draw $x + 2y = 6$ for values of x from -2 to 2 .

x	0	1	2	-1	-2
y	3	2.5	2	3.5	4



10

James has received two job offers.

A job in Milan which pays €55,000 a year.

A job in Boston which pays \$64,000 a year.

The exchange rates were £1 = \$1.42 and £1 = €1.25.

Which job offer has the highest salary?

Show working to explain your answer.

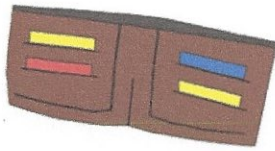
$$\text{Milan} \quad 55000 \div 1.25 = £44000$$

$$\text{Boston} \quad 64000 \div 1.42 = £45070.42$$

Boston - highest salary

(3)

11
Terry goes to the Post Office to exchange money.



Exchange Rates

\$ £ €

£1 : \$1.55

£1 : €1.24

*Commission Charged

Terry changes \$651 and €161.20 into pounds sterling.
The Post Office deducts their commission and gives Terry £528.

What is the percentage commission?

$$\begin{array}{l} \$651 \rightarrow £420 \\ €161.20 \rightarrow £130 \\ \hline £550 \end{array}$$

$$\frac{22}{550} \times 100 = 4$$

4
.....%
(4)

Martyn has some money to invest and sees this advert.

Bank of Maths

Double your money in 15 years.

The average annual growth for your investment is 4.5%

Will Martyn double his money in 15 years by investing his money with "Bank of Maths?"

You **must** show your workings.

If Martyn had £100

$$100 \times 1.045^{15} = £193.53$$

He will not double his money in 15 years

13

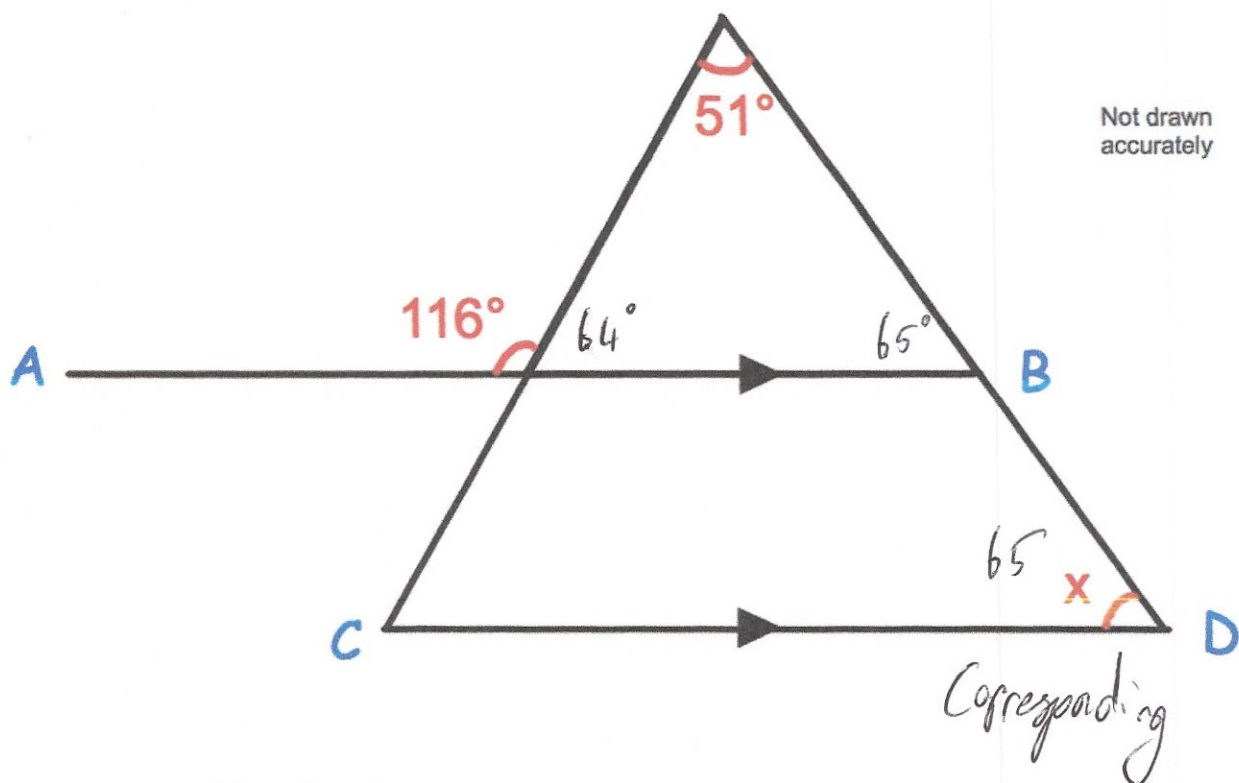
Nigel measures the time, t seconds, to complete a race as 15.4 seconds correct to the nearest tenth of a second.

Write down the error interval for t .

$$15.35 \leq t < 15.45$$

.....
(2)

14
In the diagram, AB is parallel to CD.



Work out the size of angle x.

You **must** show your workings.

$$180 - 116 = 64$$

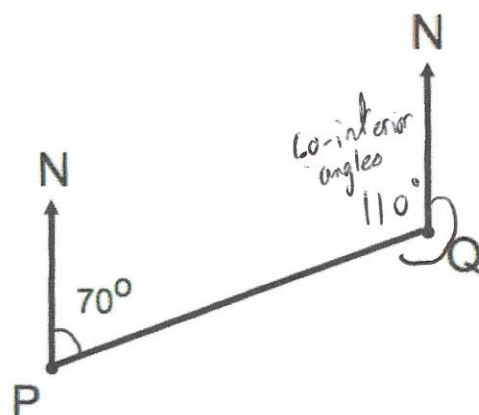
$$51 + 64 = 115$$

$$180 - 115 = 65$$

$$\underline{65}^\circ$$

(4)

The diagram shows the position of two airplanes, P and Q.



Not drawn accurately

The bearing of Q from P is 070° .

Calculate the bearing of P from Q.

$$360 - 110$$

$$250$$

(2)

16

The sum of the interior angles in a polygon is 7380° .

Calculate the number of sides the polygon has.

$$(n-2) \times 180 = 7380$$

$$(n-2) = 41$$

$$\begin{array}{r} n = 43 \text{ sides} \\ \hline (2) \end{array}$$

17

In a sale the price of a sofa is reduced by 70%.
The sale price is £255

Work out the price before the sale.

$$30\% = 255$$

$$1\% = 8.5$$

$$100\% = 850$$

£ 850
(3)

19

Expand and simplify $(x-6)(x+1)(x-2)$

$$(x-6)(x+1) = x^2 - 5x - 6$$

$$(x^2 - 5x - 6)(x-2)$$

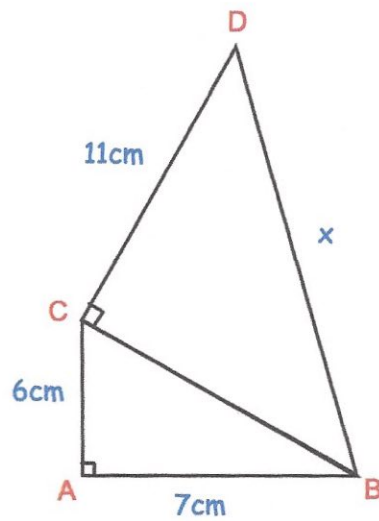
$$x^3 - 2x^2 - 5x^2 + 10x - 6x + 12$$

$$x^3 - 7x^2 + 4x + 12$$

$$\underline{x^3 - 7x^2 + 4x + 12}$$

(4)

Below are two triangles, ABC and BCD.



Find x

$$6^2 + 7^2 = BC^2$$

$$BC^2 = 85$$

$$BC = 9.2195\dots$$

$$9.2195\dots^2 + 11^2 = BD^2$$

$$BD = \sqrt{206}$$

$$14.35$$

.....cm

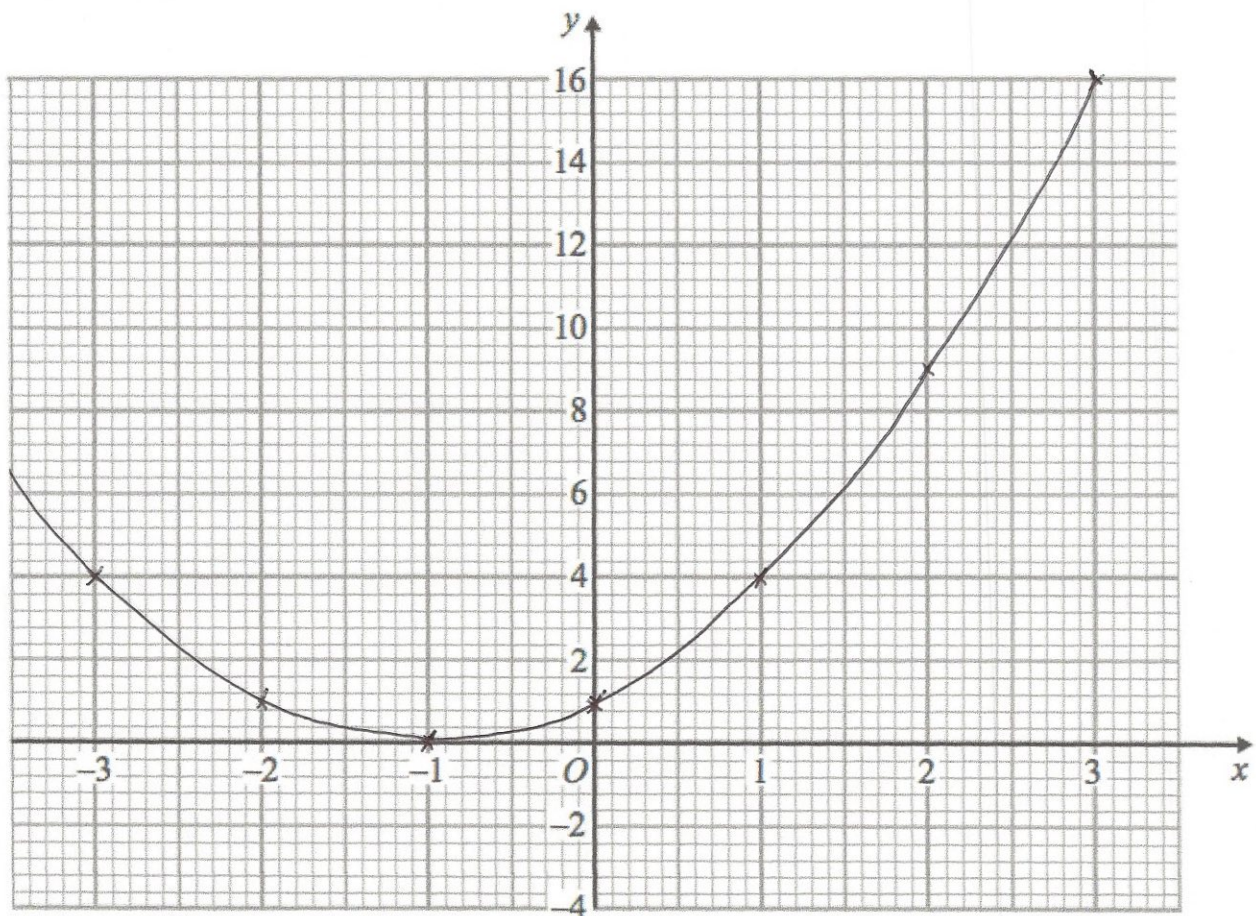
(4)

(a) Complete the table of values for $y = x^2 + 2x + 1$

x	-3	-2	-1	0	1	2	3
y	4	1	0	1	4	9	16

(2)

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

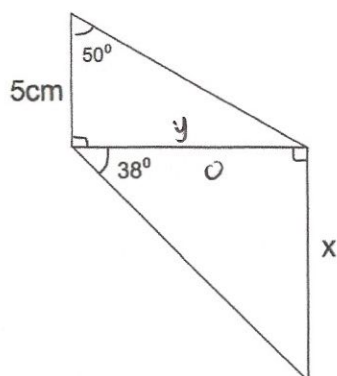


(2)

21

21

The diagram shows two right-angled triangles.



Calculate the value of x .

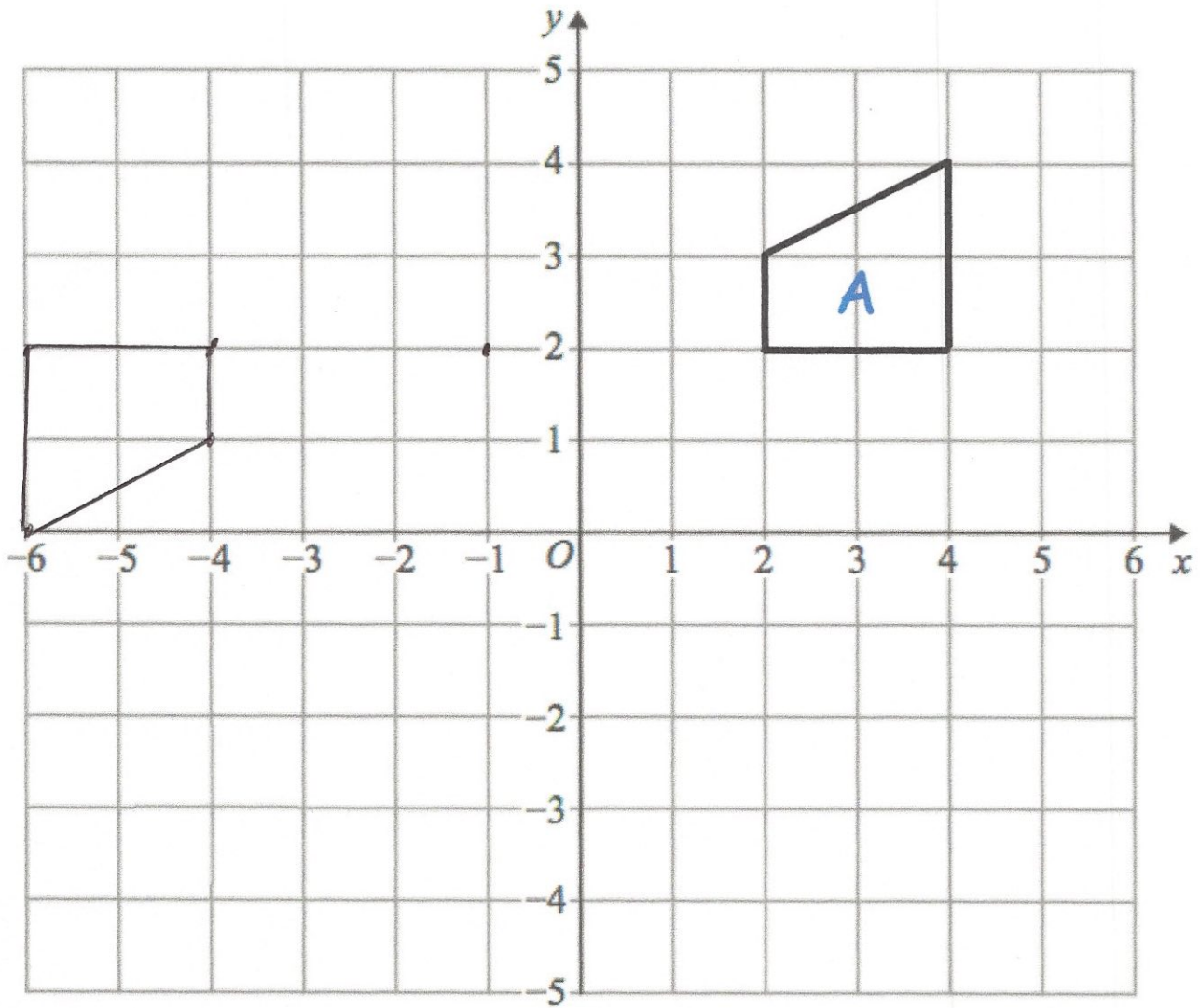
$$y = \tan(50) \times 5 = 5.9587 \dots$$

$$x = \tan(38) \times 5.9587 \dots$$

4.655

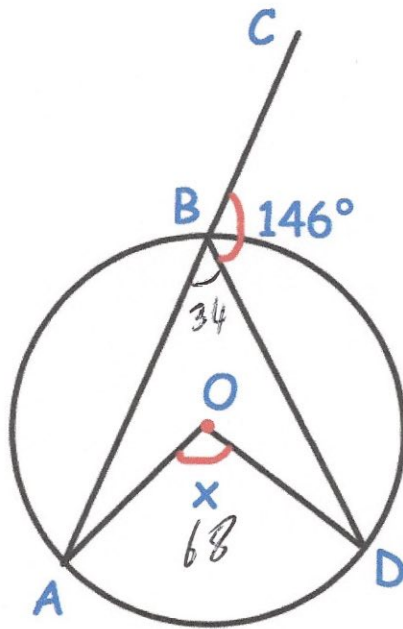
.....cm
(5)

22



Rotate shape A 180° about centre $(-1, 2)$

(3)



Shown is a circle with centre O.
 ABC is a straight line.
 Angle CBD is 146°

Find the size of angle AOD.

68

 (3)

A remote control car drives in a straight line.

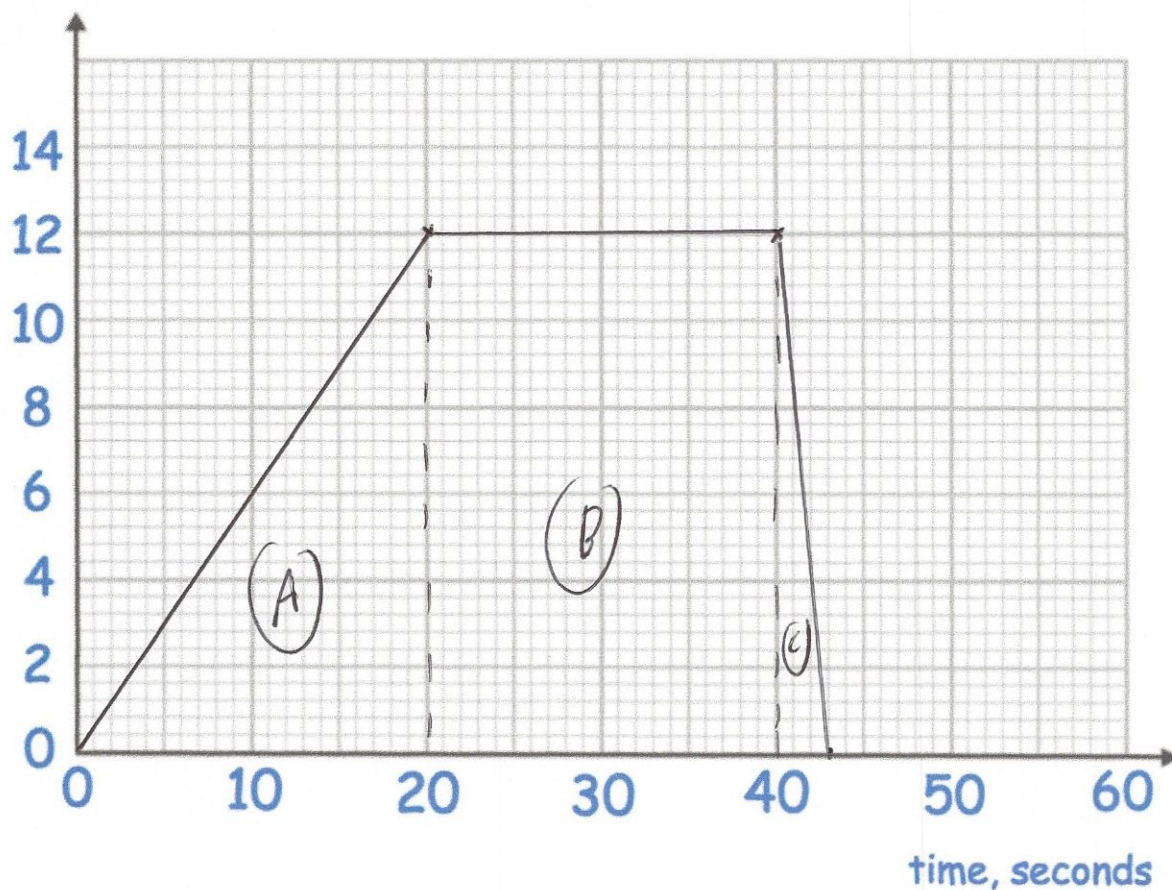
It starts from rest and travels with constant acceleration for 20 seconds reaching a velocity of 12m/s.

It then travels at a constant speed for 20 seconds.

It then slows down with constant deceleration of 4m/s².

(a) Draw a velocity time graph

Velocity, m/s



(b) Using your velocity-time graph, work out the total distance travelled.

$$A : \frac{1}{2} \times 20 \times 12 = 120$$

$$B = 20 \times 12 = 240$$

$$C : \frac{1}{2} \times 3 \times 12 = 18$$

+

$$\begin{array}{r} 378 \\ \hline \end{array} \text{m} \\ (2)$$

$$s \quad \begin{matrix} d \\ t \end{matrix}$$

Lee complete a journey in three stages.

In stage 1 of his journey, he drives at an average speed of 30km/h for 45 minutes.

(a) How far does Lee travel in stage 1 of his journey?

$$\begin{aligned} d &= s \times t \\ &= 30 \times 0.75 \end{aligned}$$

$$\begin{array}{r} 22.5 \\ \hline \end{array} \text{ km} \quad (2)$$

In stage 2 of his journey, Lee drives at an average speed of 50km/h for 2 hours 48 minutes.

Altogether, over all three stages, Lee drives 200 km in 4 hours.

What is his average speed, in km/h, in stage 3 of his journey?

$$\begin{aligned} \text{stage 2:} \quad d &= s \times t \\ &= 50 \times 2.8 = 140 \text{ km} \end{aligned}$$

$$\text{Stage 3} \quad d = 200 - 22.5 - 140 = 37.5 \text{ km}$$

$$t = 27 \text{ minutes}$$

$$s = \frac{d}{t} = \frac{37.5}{0.45}$$

$$\begin{array}{r} 83.3 \\ \hline \end{array} \text{ km/h} \quad (4)$$