Pearson Edexcel
Functional Skills

Centre Number

Candidate Number

Set 9

Time: 25 minutes

Paper Reference **PMAT2/N09**

Mathematics
Level 2
Section A (Non–Calculator)

You must have:
Pen, HB pencil, eraser, ruler graduated in cm and mm, protractor, pair of compasses. Tracing paper may be used.

Total Marks

My signature confirms that I will not discuss the content of the test with anyone.

Signature: _____

Instructions
- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Sign the declaration.
- Answer **all** questions.
- Write your final answers in the boxes provided.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- You **must** show clearly how you get your answers in the spaces provided. Marks will be awarded for your working out.
- Check your working and answers at each stage.
- Diagrams are **not** accurately drawn, unless otherwise indicated.
- **Calculators may not be used**.
- Take the value of π to be 3.14

Information
- The total mark for this section is 16.
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*
- This sign ☑ shows where marks will be awarded for showing your checks.

Advice
- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.
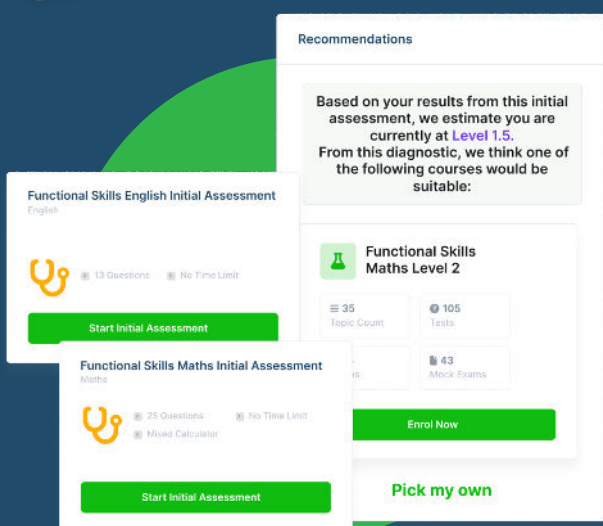
Turn over ▶

P69192A0108

Pearson

PASS FUNCTIONAL SKILLS

FUNCTIONAL SKILLS ONLINE COURSES

Recommendations

Based on your results from this initial assessment, we estimate you are currently at Level 1.5. From this diagnostic, we think one of the following courses would be suitable:

Functional Skills Maths Level 2

- ≡ 35 Topic Count
- ⏱ 105 Tests
- 📄 43 Mock Exams

Enrol Now

Pick my own

Functional Skills English Initial Assessment
English

- 13 Questions
- No Time Limit

Start Initial Assessment

Functional Skills Maths Initial Assessment
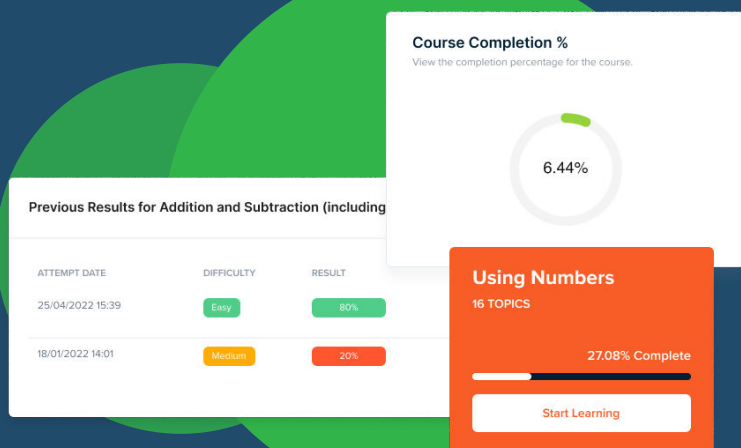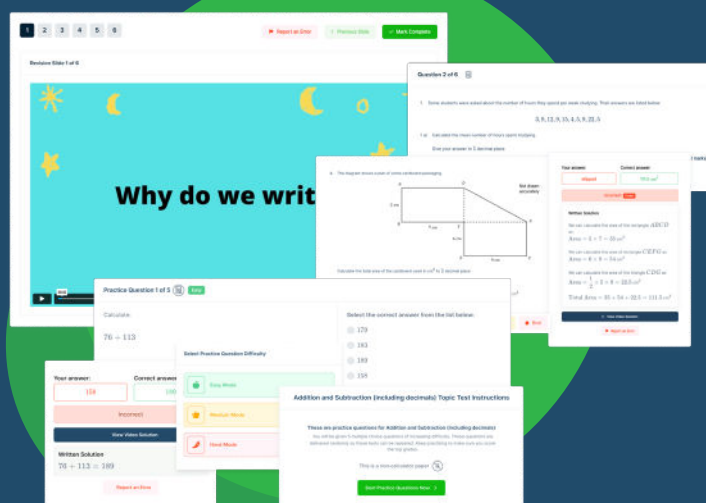Maths

- 25 Questions
- No Time Limit
- Mixed Calculator

Start Initial Assessment

✅ Your answers are analysed to determine your Current Level

✅ Suggested courses for you to enrol on based on your calculated level

✅ Always know the level you are currently working at

✅ Determine when you are ready to sit your exam

✅ Explainer videos on every topic

✅ Quick-fire style mutiple choice questions

✅ Test your knowledge with exam-style questions

✅ Written solutions for all questions

Why do we writ

Course Completion %
View the completion percentage for the course.

6.44%

Previous Results for Addition and Subtraction (including

ATTEMPT DATE	DIFFICULTY	RESULT
25/04/2022 15:39	Easy	80%
18/01/2022 14:01	Medium	20%

Using Numbers
16 TOPICS

27.08% Complete

Start Learning

✅ See your progress through as you progress through each topic area

✅ Get your average scores for practice questions, topic tests and mock exams

✅ View all practice question, topic test and mock exam attempts over time

✅ View historical attempts to analyse your progress over time

Or visit
passfunctionalskills.co.uk

Answer ALL questions. Write your answers in the spaces provided.

1 Shannan has a new car.

The petrol tank has a maximum capacity of 48 litres.
The cost of petrol is 126.7p per litre.

Shannan thinks it will cost less than £70 to completely fill an empty tank with petrol.

Use **estimation** to check if Shannan is correct.
You **must** show your working.

(3)

48 litres ≈ 50 litres

126.7p ≈ 130p

cost ≈ 50 × 130p

= 6500p

= £65.00 ← Yes, less than £70

Yes

(Total for Question 1 is 3 marks)

2 Henry is designing the car park for a new shopping centre.
The total number of parking spaces at the shopping centre will be 900

150 of the parking spaces will be for staff.
The rest of the parking spaces will be for visitors.

Henry wants 6% of the visitor parking spaces to be parking spaces for disabled visitors.

Work out the number of parking spaces for disabled visitors in this car park.

(3)

number of visitor spaces = 900 − 150
= 750

1% of 750 = 7.5 spaces

6% of 750 = 45 spaces ⎫ × 6

$\begin{array}{r} 7\,5 \\ \times\quad 6 \\ \hline 4\,5\,0 \\ {}_{3} \end{array}$

45

(Total for Question 2 is 3 marks)

3 Here is a list of numbers.

12.96   12.096   12.9   12.45   12.1   12.738   12.62

(a) Find the median.

(2)

12·096   12·1   12·45   12·62   12·738   12·9   12·96

↑
middle value

12·62

(b) Work out $\frac{7}{8} - \frac{3}{5}$

You **must** show your working.

(2)

$$\frac{7}{8} - \frac{3}{5}$$

$$= \frac{35}{40} - \frac{24}{40}$$

$$= \frac{11}{40}$$

$\frac{11}{40}$

(Total for Question 3 is 4 marks)

Turn over ▶

4 Raffi wants a two-storey extension built on the side of his house.

This scale diagram shows the plan view of the floor for each storey.

16cm

10cm

Scale 1 : 50
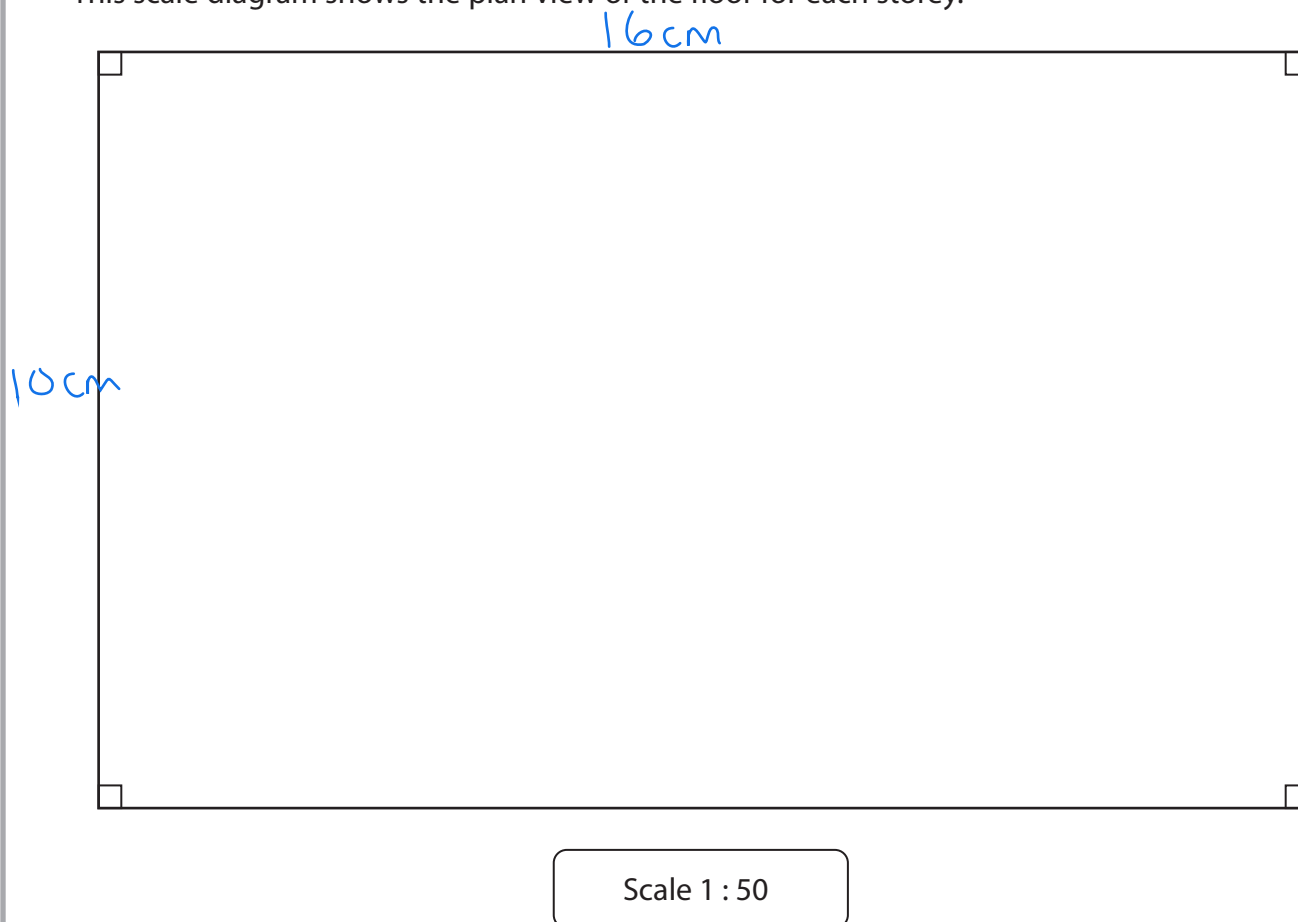
Raffi looks at the websites for different builders.

The table shows the cost per m² to build a one-storey extension.

Builder	A	B	C	D	E	F	G	H
Cost per m² (£)	1300	1350	1300	1325	1300	1340	1350	1290

Raffi will use the mode of these costs to help work out the expected cost to build this two-storey extension.

He also knows that the cost per m² to build a two-storey extension is $1\frac{1}{2}$ times the cost per m² to build a one-storey extension.

P 6 9 1 9 2 A 0 6 0 8

Work out the expected cost to build the two-storey extension for Raffi.
You **must** show your working.

(6)

real life dimensions for extension are $16 \times 50 = 800 \text{cm} = 8\text{m}$

$10 \times 50 = 500 \text{cm} = 5\text{m}$

Area of extension is $8 \times 5 = 40 \text{m}^2$ per storey

From table mode cost = £1300 (most common)

So cost for one-storey extension is $40 \times £1300 = £52,000$

cost for two-storey extension is $1.5 \times £52,000 = £78,000$

$$\begin{array}{r} 13 \\ \times\ 4 \\ \hline 5\overset{1}{2} \end{array}$$

$$\begin{array}{r} 52 \\ \times\ 15 \\ \hline 2\overset{1}{6}0 \\ +5\overset{1}{2}0 \\ \hline 780 \end{array}$$

£ 78,000

(Total for Question 4 is 6 marks)

TOTAL FOR SECTION A IS 16 MARKS

P 6 9 1 9 2 A 0 7 0 8

**Pearson Edexcel
Functional Skills**

Centre Number

Candidate Number

Set 9

Time: 1 hour 30 minutes

Paper Reference **PMAT2/C09**

Mathematics
Level 2
Section B (Calculator)

You must have:
Pen, calculator, HB pencil, eraser, ruler graduated in cm and mm, protractor, pair of compasses. Tracing paper may be used.

Total Marks

Instructions
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- Check your working and answers at each stage.
- Diagrams are **not** accurately drawn, unless otherwise indicated.
- **Calculators may be used**.
- If your calculator does not have a π button take the value of π to be 3.14

Information
- The total mark for this section is 48.
- The total mark for this paper is 64.
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question*.
- This sign ☑ shows where marks will be awarded for showing your checks.

Advice
- Read each question carefully before you start to answer it.
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Turn over ▶

Pearson

SECTION B

Answer ALL questions. Write your answers in the spaces provided.

1 Thalia owns a chocolate factory.

The workers in the factory work 7 hours per day.
They produce 65 boxes of chocolate per hour.

Thalia gets an order for 9100 boxes of chocolates.

Work out the number of days needed to produce 9100 boxes of chocolates.

(3)

$7 \times 65 = 455$ boxes per day

$9100 \div 455 = 20$ days

20

(Total for Question 1 is 3 marks)

P68474A0220

P 6 8 4 7 4 A 0 2 2 0

2 Thalia has 6 machines to produce chocolate in her factory.
Each machine produces the same amount of chocolate.

It takes $3\frac{1}{2}$ hours for these 6 machines to produce enough chocolate to fill a crate with chocolate bars.

On Tuesday only 4 of the machines are working.

Work out the number of hours the 4 machines will take to produce the chocolate needed to fill a crate with chocolate bars.

(3)

$\div 6$ (6 machines $\longrightarrow$ 3·5 hrs
     1 machine $\longrightarrow$ 21 hrs) ×6
×4 (4 machines $\longrightarrow$ 5·25 hrs) ÷4

5.25

(Total for Question 2 is 3 marks)

3 The scatter diagram shows information about the outside temperature and the number of gas units used to heat a house on each of ten days during January.

Number of gas units (y-axis), Outside temperature (°C) (x-axis)
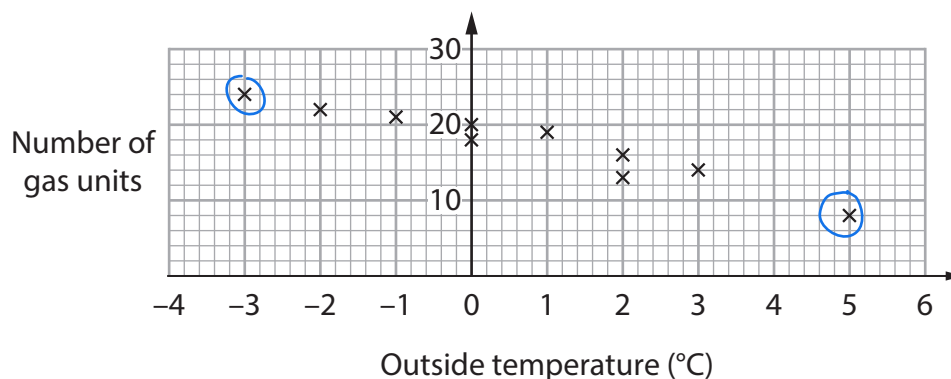
The range of the number of gas units used to heat this house each day during October was 11 gas units per day.

Jenson thinks the number of gas units used to heat this house each day is more consistent in October than in the ten days in January.

(a) Is Jenson correct?
Show why you think this.

(3)

In January, highest number of units = 24 } range for January
lowest number of units = 8 } is 24 − 8 = 16 units

October has a lower range (11 units) so October more consistent

Yes

Jenson also thinks there is no relationship between the outside temperature and the number of gas units used to heat this house in these ten days in January.

(b) Is Jenson correct?
Give a reason for your answer.

(1)

No — the graph shows a negative correlation
The warmer it gets, fewer gas units are used

(Total for Question 3 is 4 marks)

P 6 8 4 7 4 A 0 4 2 0

4 Kady runs a household waste centre.
Rubbish collected at the centre is either sent for recycling or sent to landfill.

The table shows information about the weight of each type of rubbish sent for recycling last month.

Rubbish type	Weight (tonnes)
Garden waste	224.56
Wood and cardboard	101.81
Metal	37
Glass, soil and rubble	138.9
Electrical	16.54
Other	82.45

The total weight of rubbish collected at the centre last month was 653.64 tonnes.

What percentage of all the rubbish collected last month was sent for recycling?
Give your answer correct to the nearest whole number.

(3)

total amount recycled is:

224.56 + 101.81 + 37 + 138.9 + 16.54 + 82.45 = 601.26 tonnes

As a percentage of total rubbish, $\frac{601.26}{653.64} \times 100 = 91.986...\%$

92% (nearest whole number)

92 %

(Total for Question 4 is 3 marks)

5 Natalie will plant flower bulbs on a road roundabout.
The roundabout is in the shape of a circle with diameter 14 m.

Natalie will plant the flower bulbs in a circle 75 cm from the edge of the roundabout.
The dashed line in the sketch below shows where the flower bulbs will be planted.

75 cm

1400 cm
14 m

75 cm

S●
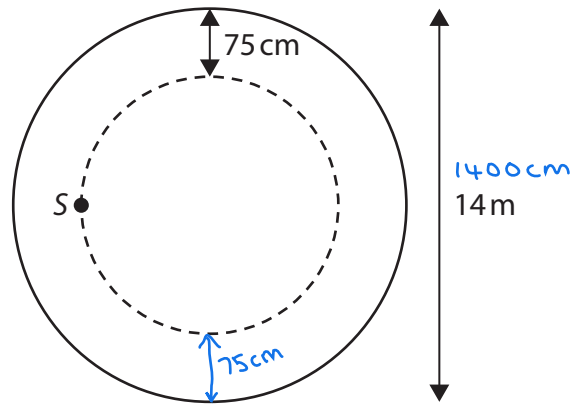
Natalie will plant a flower bulb every 25 cm starting from point *S*.

The flower bulbs are sold in packs.
Each pack has 16 flower bulbs.

How many packs of flower bulbs will Natalie need?

(5)

Diameter of inner circle = 1400 − 75 − 75
           = 1250 cm

Circumference of inner circle = 3.14 × 1250
            = 3925 cm

number of bulbs needed = 3925 ÷ 25
          = 157

number of packs needed = 157 ÷ 16
          = 9.8125

        So 10 whole packs

P 6 8 4 7 4 A 0 6 2 0

10 packs

(Total for Question 5 is 5 marks)

6 Andrew is training to run in the New York Marathon.
The New York Marathon is 26.2 miles long.

The qualifying times to run in the New York Marathon are shown in the table below.

Age (years)	Time (hours : mins)
18 – 34	2 : 53
35 – 39	2 : 55
40 – 44	2 : 58
45 – 49	3 : 05
50 – 54	3 : 14
55 – 59	3 : 23
60 – 64	3 : 34
65 – 69	3 : 45
70 – 74	4 : 10
75 – 79	4 : 30
80 +	4 : 55

Andrew is 51 years old.
His current average running speed is 8 miles per hour.

Andrew thinks he will need to run at a faster speed to be able to qualify for the New York Marathon.

$$\frac{D}{S \quad T}$$

Is Andrew correct?
Show why you think this.

(3)

Time Andrew will take is $\frac{26.2}{8}$ = 3·275 hrs

0·275 hrs = 0·275 × 60 mins
= 16·5 mins

So Andrew will take 3hrs 16·5 mins

For his age category, he needs to finish in 3hrs 14 mins to qualify
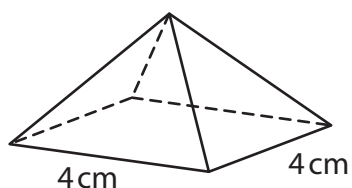
So yes, to be able to qualify he needs to run faster

Yes
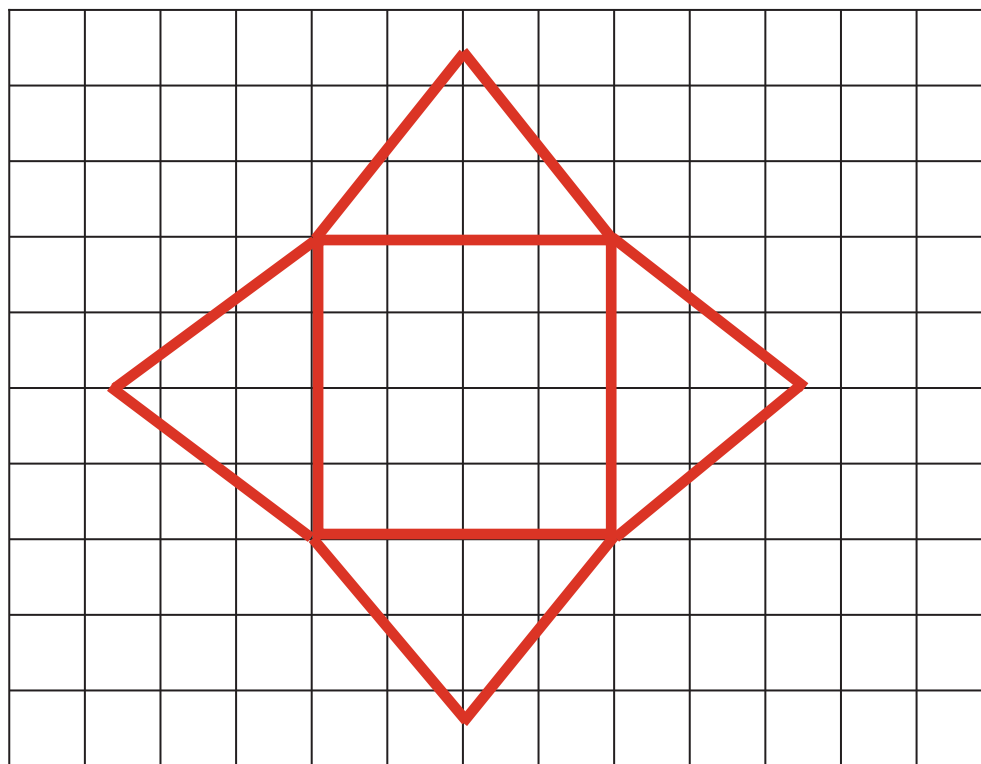
(Total for Question 6 is 3 marks)

8

7 Here is a sketch of a square based pyramid and one of the triangular faces.

3.2 cm

2.5 cm

4 cm

4 cm

4 cm
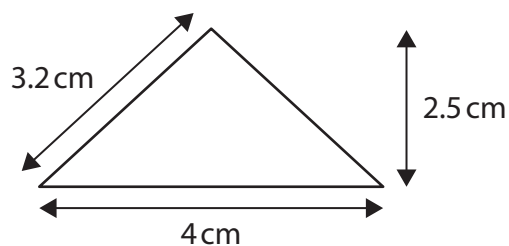
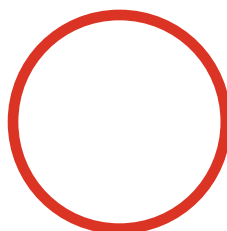(a) Draw an accurate net of this pyramid on the centimetre grid below.

(3)

The base of a tin of paint is placed on the floor.
The tin of paint is in the shape of a cylinder.

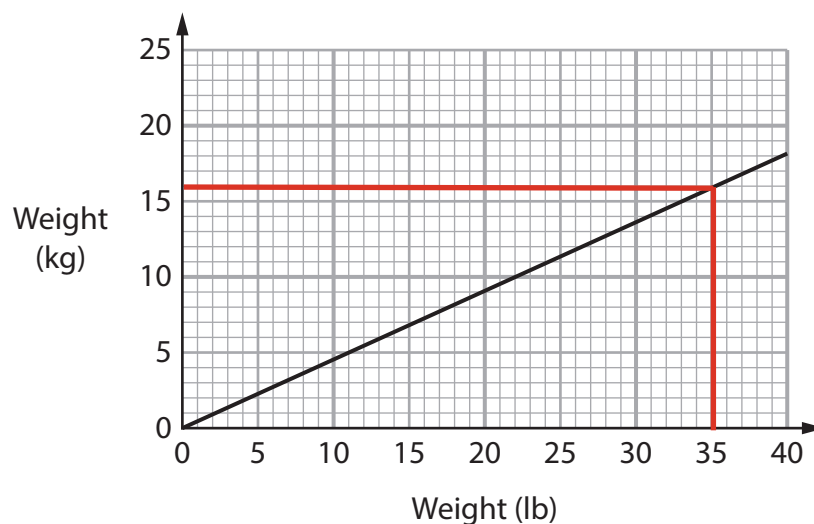(b) Draw a sketch of the plan view of the tin of paint.

(1)

(Total for Question 7 is 4 marks)

8 Dave needs to make 3500 lbs of concrete mix using cement, sand and gravel.
He will mix cement, sand and gravel in the ratio 1 : 2 : 5 by weight.

Cement, sand and gravel are sold in kilograms.

Dave uses this graph to convert between lb and kg.

(a) Work out the weight, in kilograms, of cement, of sand and of gravel that
Dave needs to buy.
You **must** show your working.

(5)

c : s : g
Divide 3500 lb in ratio 1 : 2 : 5

1 + 2 + 5 = 8 parts

so 3500 lb = 8 parts

437·5 lb = 1 part

1 part	2 parts (×2)	5 parts (×5)
437·5 lb	875 lb	2187·5 lb

From graph, 35 lb = 16 kg
÷35 (1 lb = $\frac{16}{35}$ kg) ÷35

So to convert from lb to kg, × by $\frac{16}{35}$

cement : 437·5 × $\frac{16}{35}$ = 200 kg

sand : 875 × $\frac{16}{35}$ = 400 kg

gravel : 2187·5 × $\frac{16}{35}$ = 1000 kg

P 6 8 4 7 4 A 0 1 0 2 0

Cement	...........200... kg	
Sand	.............400.. kg	
Gravel	.............1000.. kg	

☑ (b) Show a check of your ratio calculation.

(1)
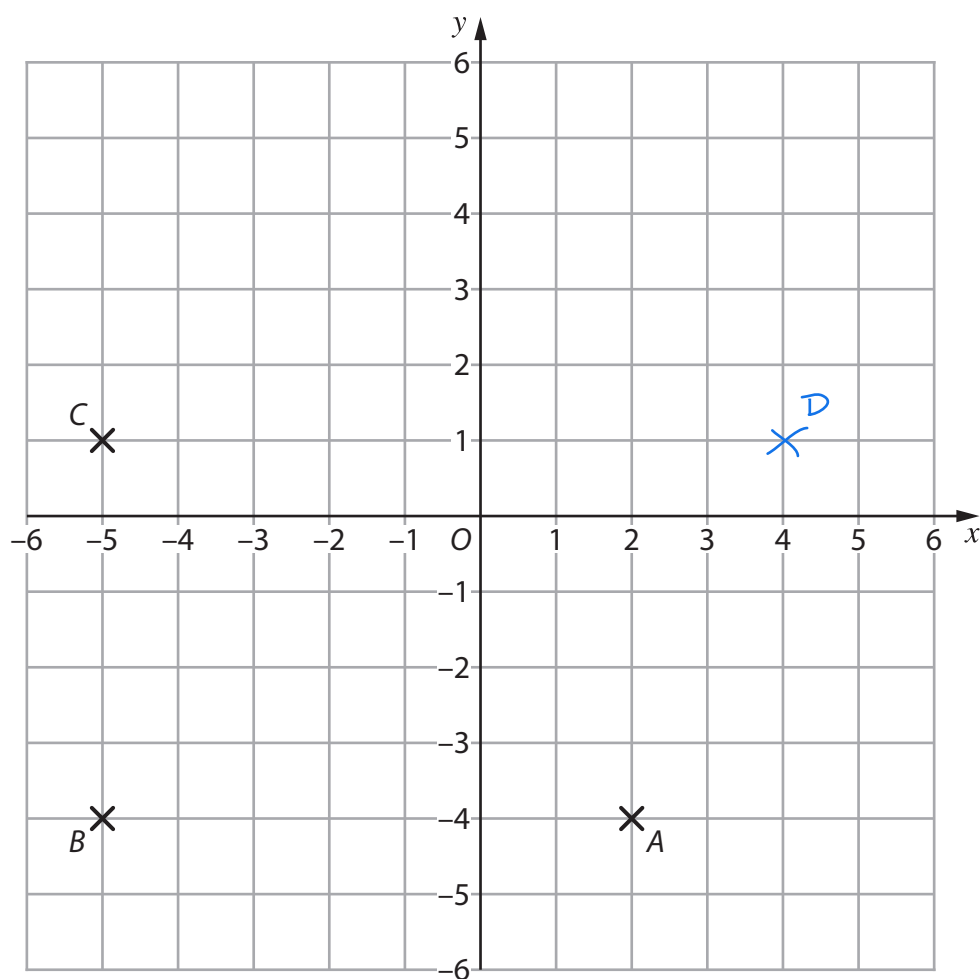
$200 + 400 + 1000 = 1600$ kg in total

1600 kg $\div \frac{16}{35} = 3500$ lb as required

(Total for Question 8 is 6 marks)

9 Here is a centimetre grid.

(a) Write down the coordinates of point *B*.

(1)

(-5 , -4)

D is a point on the grid.

The trapezium *ABCD* has
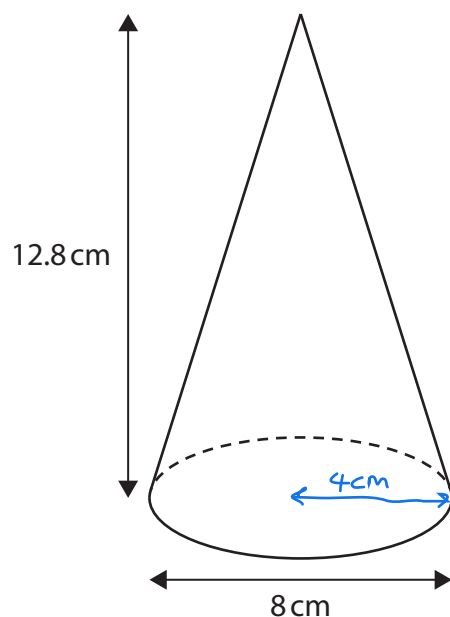
- exactly 2 right angles
- one side of length 9 cm.

(b) Plot a possible position for point *D* on the grid.

(2)

(Total for Question 9 is 3 marks)

10 Here is a cone.

$$V = \frac{1}{3}\pi r^2 h$$

V is the volume
r is the radius of the base of the cone
h is the vertical height

12.8 cm

4cm

8 cm

Work out the volume of this cone.
Remember to state the units.

(3)

Volume $= \frac{1}{3} \times 3.14 \times 4 \times 4 \times 12.8$

$= 214.36\,cm^3$

214·36

(Total for Question 10 is 3 marks)

P 6 8 4 7 4 A 0 1 3 2 0

11 Darius restores old furniture.
He has 12 chairs and 3 tables to restore.

Darius writes a list of the costs to restore all of the chairs and all the tables.

Costs	
tables and chairs	free
7 tins of wood oil	£12.50 each
10.5 metres fabric	£6.90 per metre
foam cushions	£82.50

Darius sells each table for £127 and each chair for £32

Work out the percentage profit Darius makes after selling all the chairs and all the tables.
Give your answer correct to 1 decimal place.

(5)

In total it costs Darius $(7 \times £12.50) + (10.5 \times £6.90) + £82.50$

$= £87.50 + £72.45 + £82.50$

$= £242.45$

In total he makes $(12 \times £32) + (3 \times £127)$

$= £384 + £381$

$= £765$

His percentage profit is $\dfrac{765 - 242.45}{242.45} \times 100 = 215.5\%$ to 1dp

215.5 %

(Total for Question 11 is 5 marks)

12 Jasmine is doing a survey about learning to drive.

The table shows information about the number of driving lessons 60 people had before passing their driving test.

Number of driving lessons	Frequency	midpoint	midpoint × frequency
1 to 15	6	8	8 × 6 = 48
16 to 30	18	23	23 × 18 = 414
31 to 45	25	38	38 × 25 = 950
46 to 60	11	53	53 × 11 = 583
total:	60		1995

Jasmine estimates that the mean number of driving lessons these people had before passing their driving test is more than 35 lessons.

(a) Is this estimate of the mean correct?
Show why you think this.

(3)

$$\text{Mean} = \frac{1995}{60} = 33.25$$

↑

No, not more than 35

No

P 6 8 4 7 4 A 0 1 6 2 0

☑

(b) Use a reverse calculation to show a check of your answer.

(1)

33·25 × 60 = 1995

One of these 60 people is chosen at random.

(c) What is the probability that this person had more than 30 lessons
before passing their driving test?
Give your answer as a decimal.

(2)

Looking at last two categories, so 25 + 11 = 36 people

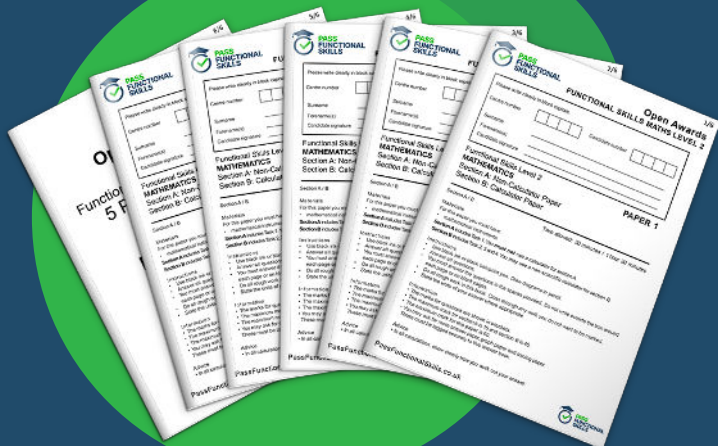$\frac{36}{60}$ = 0·6

0·6

(Total for Question 12 is 6 marks)

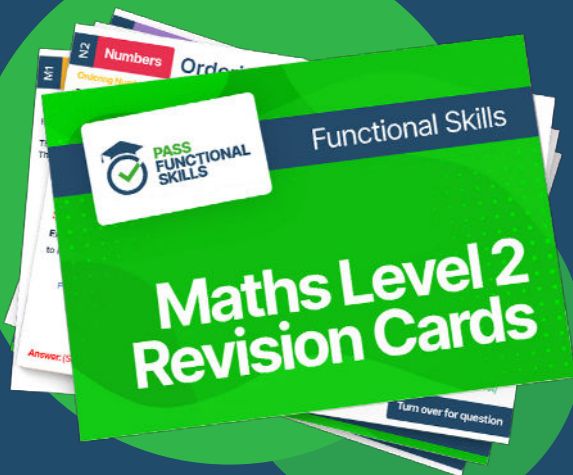**TOTAL FOR SECTION B IS 48 MARKS**
TOTAL FOR PAPER IS 64 MARKS

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