Write your name here

Surname	Other names

Pearson Edexcel Functional Skills

Centre Number | | | | | |

Candidate Number | | | | |

Mathematics

Level 2

16 – 20 July 2018

Time: 1 hour 30 minutes

Paper Reference

FSM02/01

You must have:
Pen, calculator, HB pencil, eraser, ruler graduated in cm and mm, protractor, compasses.

Total Marks

My signature confirms that I will not discuss the content of the test with anyone until the end of the 5 day test window.

Signature: _____

Instructions

- Use a **black** 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.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- **Calculators may be used.**

Information

- The total mark for this paper is 48.
- The marks for each question are shown in brackets
  – *use this as a guide to how much time to spend on each question.*
- **You must show clearly how you get your answers because marks will be awarded for your working out.**
- **Check your working and your answers at each stage.**
- **This sign shows where marks will be awarded for showing your check.**

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.

Turn over ▶

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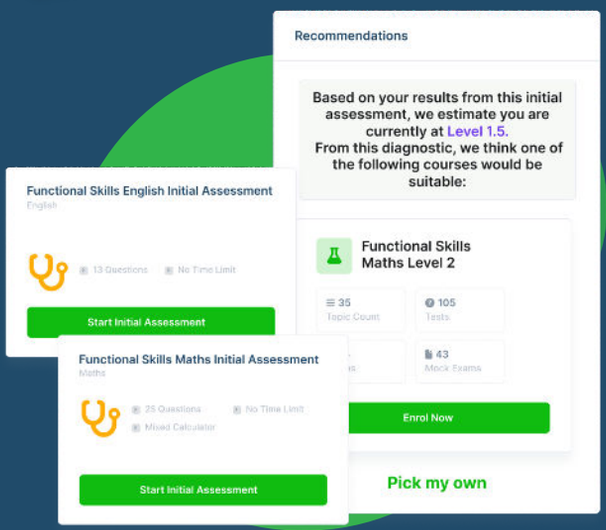
Pearson

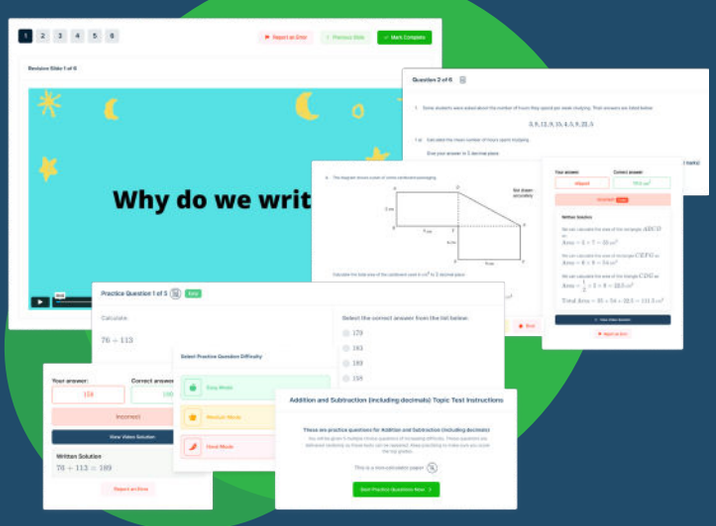
PASS FUNCTIONAL SKILLS

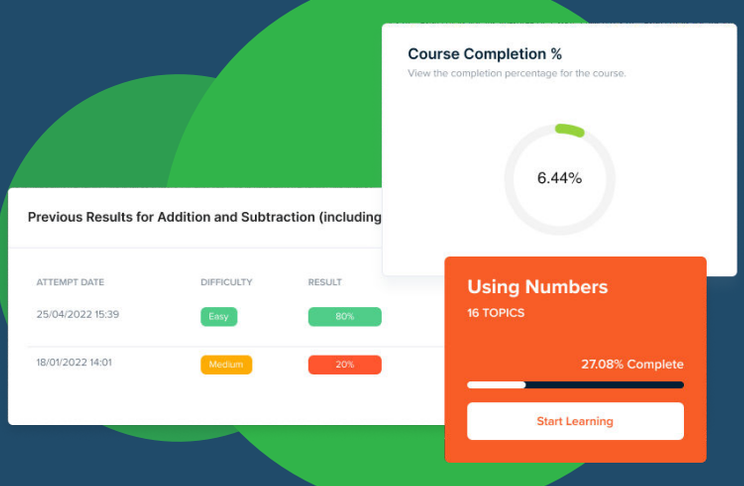
FUNCTIONAL SKILLS ONLINE COURSES



- 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





- 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

SECTION A: Railway

Answer all questions in this section.

Write your answers in the spaces provided.

1 Petra works for a train company.
She writes a report for her manager.

The table shows the number of passengers who used a train station last week.

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Number of passengers	29500	28700	23100	21800	29400	20700	13400

(a) Work out the mean daily number of passengers who used the train station last week.
Show a check of your working. (3)

Use the box below to show clearly how you get your answer.

$29500 + 28700 + \cdots + 20700 + 13400 = 166600.$

$\frac{166600}{7} = 23800.$

Use the box below to show your check.

☑ $23800 \times 7 = 166600 = 29500 + \cdots + 13400.$

Petra also has this information about the arrival times of trains last week.

Arrival times	on time	up to 10 minutes late	more than 10 minutes and up to 30 minutes late	more than 30 minutes late
Number of trains	287	54	17	5

The train company has a target

98% of trains must arrive no more than 10 minutes late.

(b) Was the target met last week?
Show why you think this. (3)

Use the box below to show clearly how you get your answer.

$287 + 54 = 341$

$341 + 17 + 5 = 363.$

$\frac{341}{363} \times 100 = 93.93\%.$

No, the target was not met.

(Total for Question 1 is 6 marks)

2 Mo manages track repairs.
He needs to order 60 tonnes of stones for a track repair.

The stones are sold in full cuboid containers.
A full container of stones is 80 cm by 80 cm by 70 cm.

Mo knows that

- 1 m^3 of the stones weighs 1.8 tonnes
- each container of stones costs £45.16

Mo wants to order the smallest number of containers of stones as possible.

Work out the total cost of the containers of stones Mo needs to order.

(6)

Use the box below to show clearly how you get your answer.

$0.8m \times 0.8m \times 0.7m = 0.448\ m^3$.

$0.448 \times 1.8 = 0.8064$ tonnes per container.

$\frac{60}{0.8064} = 74.40$ containers

$\rightarrow$ 75 containers needed.

£45.16 × 75 = £3387.

(Total for Question 2 is 6 marks)

3 There is a high-speed rail track between London and Manchester.

The length of this track is 210 miles.

A train departs London at 11:20 and arrives in Manchester at 13:28

The train company claims

the average speed of this train is 104 miles per hour.

Is the average speed of this train 104 miles per hour?

(4)

Use the box below to show clearly how you get your answer.

13:28 − 11:20 = 2hr, 8 min = $2.1\dot{3}$ hrs.

$$\frac{210\text{mi}}{2.1\dot{3}\text{ hr}} = 98.4375 \text{ mph}.$$

No, the average speed is not 104mph.

(Total for Question 3 is 4 marks)

SECTION B: Electrical company

Answer all questions in this section.

Write your answers in the spaces provided.

4 Josh is a product designer for an electrical company.
He designs a new table lamp.

Josh will use plastic to make the lamp.

He uses this formula to work out the amount of plastic needed.

$$P = b^2 + 2bh$$

where

P is the amount of plastic needed (cm^2)
b is the length of the base (cm)
h is the slope height (cm)

The length of the base of the lamp will be 13 cm.
The slope height of the lamp will be 34 cm.

Josh thinks the amount of plastic needed will be less than 1000 cm^2

(a) Is Josh correct?
Show why you think this. (3)

Use the box below to show clearly how you get your answer.

$P = 13^2 + (2 \times 13 \times 34)$

$= 1053\ cm^2.$

Josh is incorrect.

Josh wants to make the lamp purple.
He will use dye to make the plastic purple.

Josh will mix red dye with green dye and blue dye in the ratio 9 : 3 : 15 to make purple dye.

Josh uses 30 litres of green dye.

(b) How many litres of purple dye will Josh make with the 30 litres of green dye? Show a check of your working. (5)

Use the box below to show clearly how you get your answer.

$9+3+15 = 27$ parts.

$\frac{27}{3} \times 30 = 270\text{L}$.

Use the box below to show your check.

☑ $270 \times \frac{3}{27} = 30\text{L}$.

(Total for Question 4 is 8 marks)

5 Kirash works in the finance department of the company.
He has this information about prices of similar lamps.

lamp	A	B	C	D	E	F
price	£27.90	£25.50	£36.40	£29.60	£41.50	£33.80

Kirash needs to set the price for the lamp Josh designed.

He will set the price at $\frac{5}{4}$ of the median price of the six similar lamps.

What price should Kirash set for the lamp Josh designed?

(4)

Use the box below to show clearly how you get your answer.

25.5, 27.9, 29.6, 33.8, 36.4, 41.5

$\frac{29.60 + 33.80}{2} = £31.70$

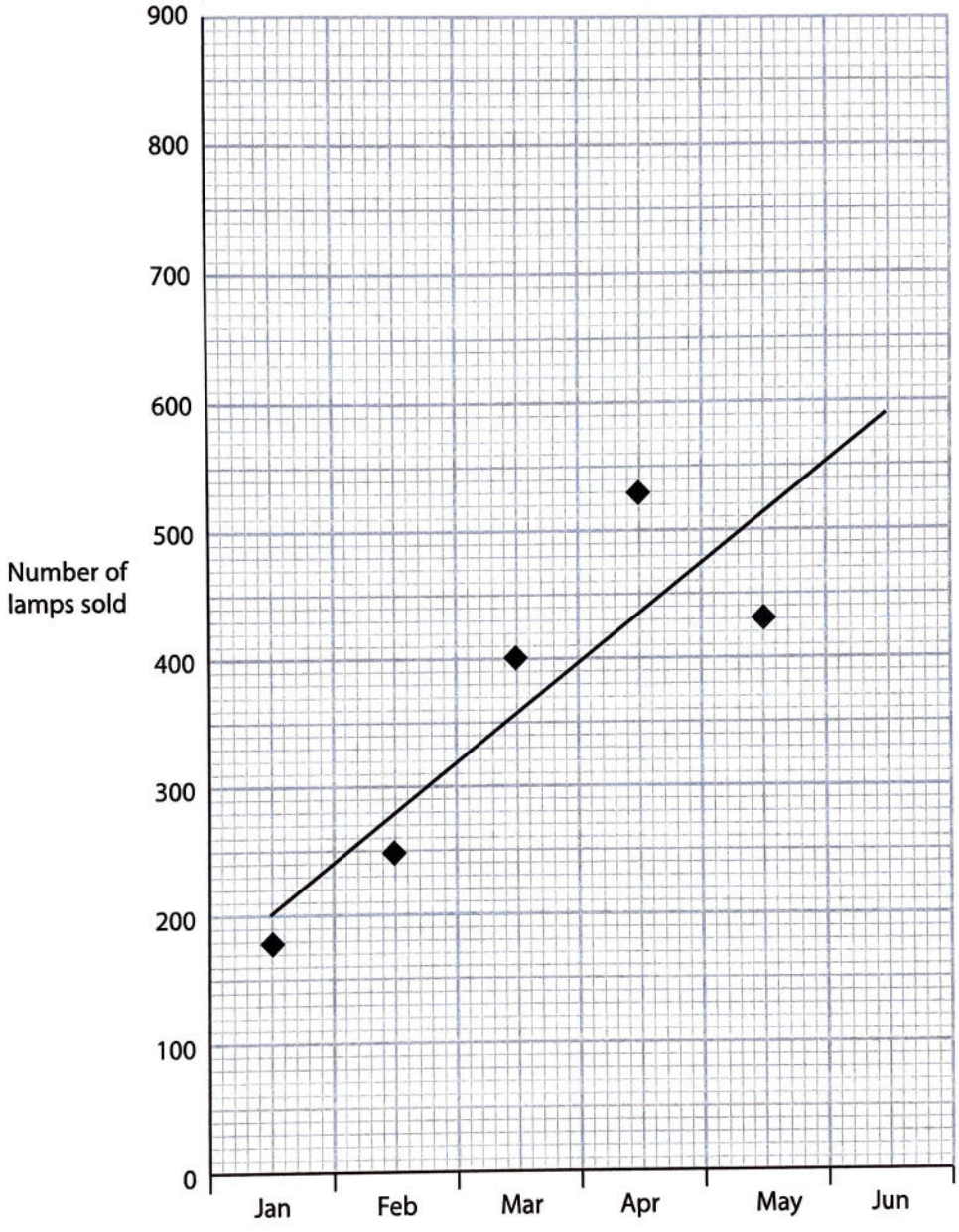
$\frac{5}{4} \times £31.70 = £39.625$

£39.63.

(Total for Question 5 is 4 marks)

6 Kirash begins to write a report about the number of lamps sold.

He draws this graph.



Kirash uses the trendline on this graph to predict the number of lamps that will be sold in June.

He knows that the profit for each lamp sold is £14.50

(a) Estimate the profit expected from the sale of lamps in June.

(3)

Use the box below to show clearly how you get your answer.

590 lamps sold.

590 × £14.50 = £8555.

(b) How suitable is this estimate?
Give a reason for your answer. (1)

Use the box below to write your answer.

Not suitable – less lamps would be used / bought in summer.

(Total for Question 6 is 4 marks)

SECTION C: Organising a run

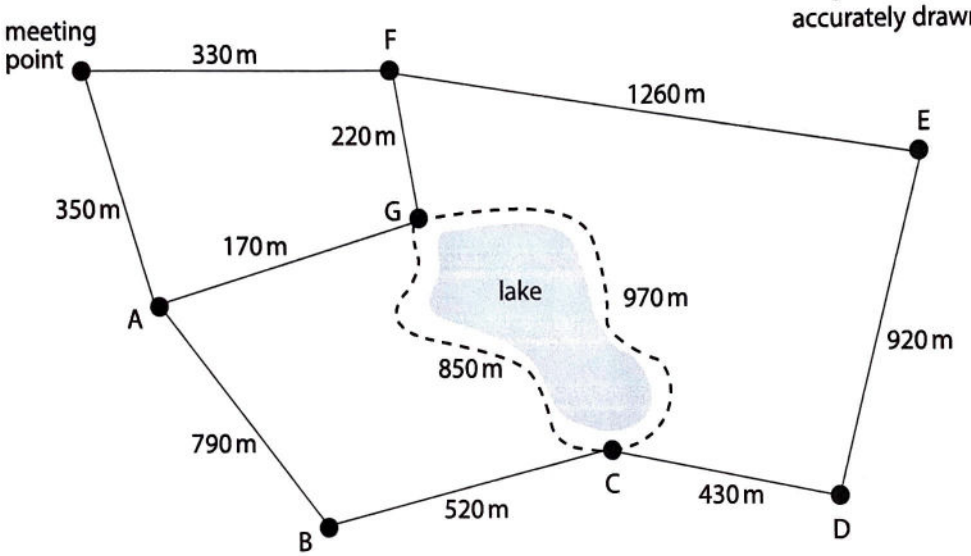
Answer all questions in this section.

Write your answers in the spaces provided.

7 Zara is the manager of a fitness club.
She organises a run in a park.
She needs to plan a route for the run.

Zara has this map of the park.

Diagram **not** accurately drawn



Key
---------- lakeside path

Zara wants the route of the run to

- start and end at the meeting point
- go along the full length of the lakeside path
- go through point A
- have a total distance between 4 and 4.5 miles.

Zara knows that 5 miles is 8 km.

Plan a route for Zara.
Show the total distance of the route. (6)

Use the box below to show clearly how you get your answer.

$4 \times \frac{8}{5} = 6.4\text{ km} = 6400\text{m}.$

$4.5 \times \frac{8}{5} = 7.2\text{km} = 7200\text{m}.$

Between 6400 and 7200m.

MP → A → B → C → G → C → D → E → F → MP:

350 + 790 + 520 + 970 + 850 + 430 + 920 + 1260 + 330

= 6420 m.

(Total for Question 7 is 6 marks)

8 Advertising in newspapers is charged by area.

Zara wants to advertise the run in a newspaper.
She will use a rectangular picture 105 mm by 148 mm.

To use the picture in the newspaper she needs to reduce its size.
She will use a scale factor of 0.8 to reduce the length of each side of the picture.

Work out the area of the picture that will appear in the newspaper.

(3)

Use the box below to show clearly how you get your answer.

$105 \times 0.8 \times 148 \times 0.8$

$= 9945.6 \text{ mm}^2$.

(Total for Question 8 is 3 marks)

9 Zara needs to buy t-shirts to sell to people at the run.
She finds this offer for t-shirts

> £4.79 per t-shirt
>
> add a logo
> £2.90 per t-shirt
>
> buy more than 100 t-shirts each with a logo and get 15% off the total price

Zara wants to buy 130 t-shirts.
Each t-shirt will have a logo on it.

(a) How much will Zara pay in total for 130 t-shirts each with a logo? **(4)**

Use the box below to show clearly your answer.

£4.79 + £2.90 = £7.69 per shirt.

130 × £7.69 = £999.70 paid.

1 − 0.15 = 0.85

£999.70 × 0.85 = £849.745

→ £849.75.

Zara wants to record some information about the people who take part in the run.

She wants to know

- their gender (female, male)
- their age (16–30, over 30)
- how they heard about the run (newspaper, internet, friends).

(b) Design a data collection sheet for Zara.

(3)

Use the box below to show your data collection sheet.

	Male		Female	
	16-30	30+	16-30	30+
Newspaper				
Internet				
Friends				

(Total for Question 9 is 7 marks)

TOTAL FOR PAPER IS 48 MARKS

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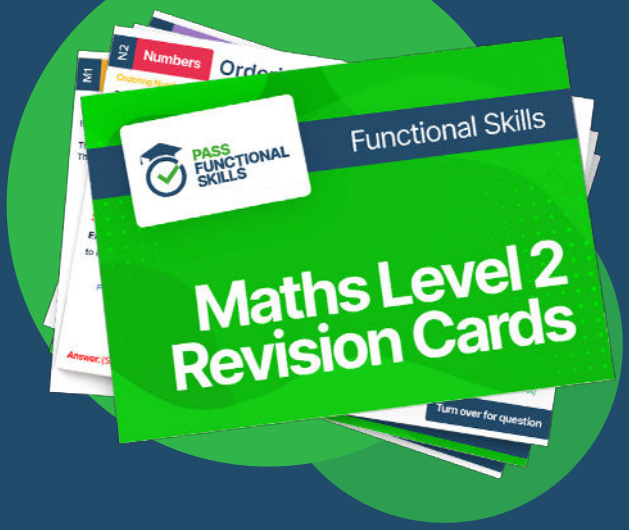

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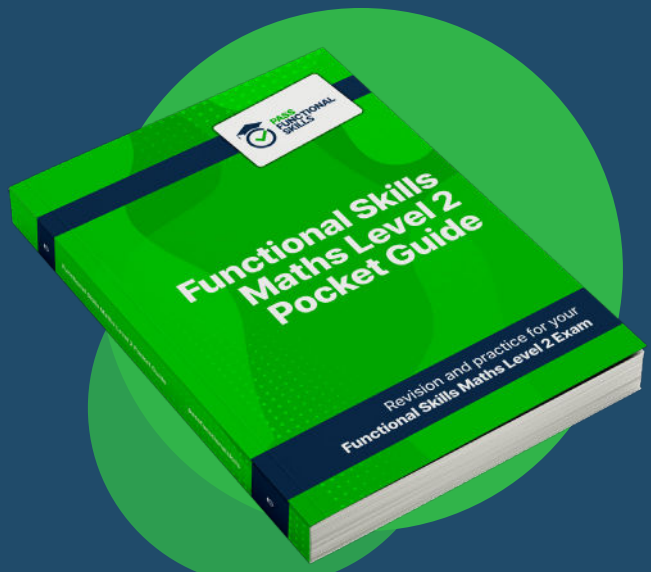

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