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| Write your name here | | | | | | | | | | | | | |
| Surname | | | Other names | | | | | | | | | | |
| Pearson Edexcel Functional Skills | | Centre Number | | Candidate Number | | | | | | | | | |
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| | | | | | | | | | | | | | |
| <h1 style="margin: 0;">Mathematics</h1> <h2 style="margin: 0;">Level 2</h2> | | | | | | | | | | | | | |
| 30 April – 4 May 2018 | | | | Paper Reference | | | | | | | | | |
| Time: 1 hour 30 minutes | | | | 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

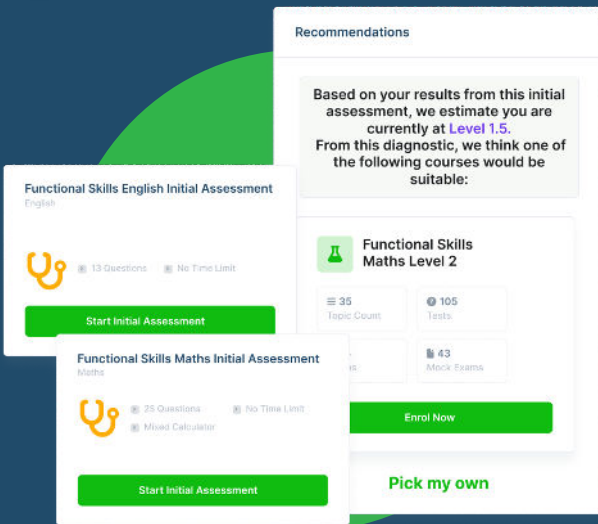
- Read each question carefully before you start to answer it.
- Keep an eye on the time.

Turn over ►



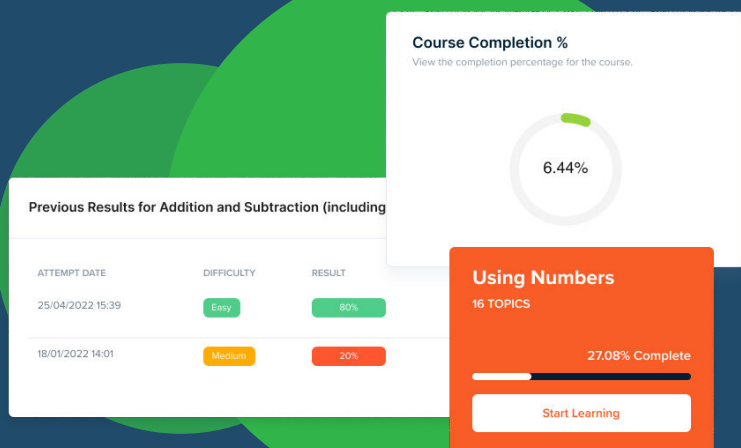
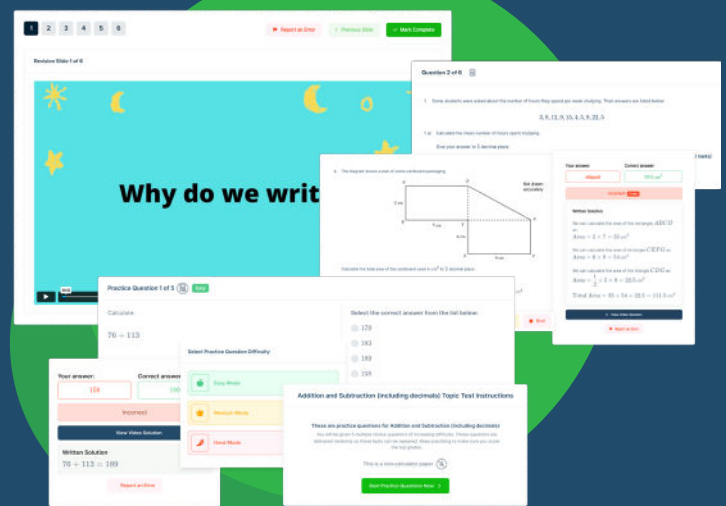


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SECTION A: Car trader**Answer all questions in this section.****Write your answers in the spaces provided.**

- 1 Adam works for a car trading company.

He has this information about the number of cars sold by the company in the first six months of 2017

| | Jan | Feb | Mar | Apr | May | Jun |
|---------------------|-----|-----|-----|-----|-----|-----|
| Number of cars sold | 31 | 28 | 46 | 52 | 44 | 62 |

Adam says

The mean number of cars sold each month in this period was more than 42

The number of cars sold in June 2017 was more than $\frac{1}{5}$ of the number of cars sold from the beginning of January to the end of June.

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

(4)

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

$$31 + 28 + 46 + 52 + 44 + 62$$
$$= 263$$

$$\frac{263}{6} = 43.8\bar{3}$$

~~31 + 28 + 46 + 52 + 44 + 62~~

$$\frac{1}{5} \times 263 = 52.6$$

Yes, the mean number of cars sold per month is greater than 42.

The number of cars in June is greater than $\frac{1}{5}$ of the total number of cars, also.

Adam has an annual target to sell 94 cars a year.

Adam gets a bonus if he meets his target.

His bonus is

- 1.75% of the total sales he makes in a year
- an extra £150 for each car he sells over his target.

In 2017 Adam sold 114 cars and the total sales he made were £316 400

Adam thinks he will get a bonus of more than £8000 for 2017

(b) Will Adam get a bonus of more than £8000?

(4)

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

$$(114 - 94) \times £150 = £3000 \text{ (over target).}$$

$$\frac{1.75}{100} \times £316400 = £5537 \text{ (commission).}$$

$$£3000 + £5537 = £8537.$$

Yes, he will get a bonus larger than
£8000.

(Total for Question 1 is 8 marks)

2 Adam offers 3 payment options to car buyers.

The payment options are

- A) cash
- B) instalments
- C) lease.

Adam sold 114 cars last year

- 19 cars with option A
- 57 cars with option B
- the remaining cars with option C.

Adam is going to write a report for his manager.

He needs to show the ratio of the number of cars sold using each payment option in the form A : B : C

Write down the ratio in the form A : B : C
Give the ratio in its simplest form.

(3)

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

$$114 - (19 + 57) = 38 \text{ (option C).}$$

$$\Rightarrow A : B : C$$

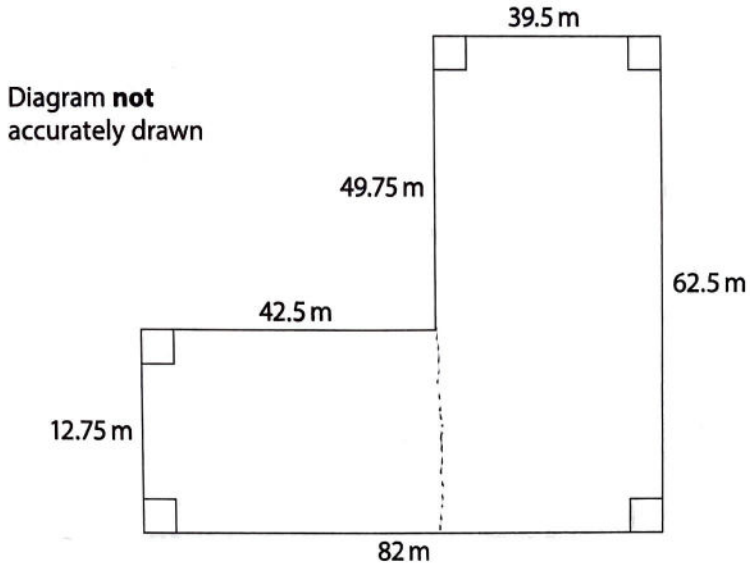
$$19 : 57 : 38$$

$$\Rightarrow 1 : 3 : 2.$$

(Total for Question 2 is 3 marks)

- 3 Kali works for a building company.
She needs to put a new surface on the car park of the car trading company.

The diagram shows the section of the car park that needs a new surface.



Kali will cover the whole section of the car park with concrete.
The concrete will be 0.09 m deep.

What is the total volume of concrete Kali will need?
Show a check of your working.

(5)

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

$$(42.5 \times 12.75) + (39.5 \times 62.5) = 3010.625 \text{ m}^2$$

$$3010.625 \text{ m}^2 \times 0.09 \text{ m} = 270.95625 \text{ m}^3$$

$$\rightarrow 270.96 \text{ m}^3$$

Use the box below to show your check.



$$\frac{270.96 \text{ m}^3}{0.09 \text{ m}} = 3010.625 \text{ m}^2 = (42.5 \times 12.75) + (39.5 \times 62.5)$$

(Total for Question 3 is 5 marks)

SECTION B: Theatre**Answer all questions in this section.****Write your answers in the spaces provided.**

- 4 Catherine works in a theatre.
She sets the price of tickets for a new show.

Catherine uses this formula to find the price of a ticket for a seat in the stalls.

$$P = \frac{6500}{x + 0.9y}$$

P is the normal price of a ticket for a seat in the stalls (£)
x is the total number of seats in the stalls
y is the total number of seats in the balcony

The theatre has

- 180 seats in the stalls
- 70 seats in the balcony.

On Monday Catherine sells 45 tickets for seats in the stalls to a school.
She charges 60% of the normal ticket price for each seat.

- (a) Work out the total amount Catherine should charge the school.

(5)

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

$$180 + (0.9 \times 70) = 243$$

$$\frac{6500}{243} = 26.75$$

$$0.6 \times 26.75 \times 45 = £722.22.$$

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Catherine checks the formula.
She realises the figure 6500 should have been 6000

(b) What effect does this error have on the price of a ticket for a seat in the stalls? (1)

Use the box below to write your comment.

The price is too high, it should decrease.

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Catherine wants to record information about the people who see the new show on Friday.

She wants to know their

- gender (female, male)
- age (16–24, 25 and over)
- rating for the show (excellent, good, poor).

(c) Design a data collection sheet for Catherine.

(3)

Use the box below to show your data collection sheet.

| | Male | | Female | |
|-----------|-------|-----|--------|-----|
| | 16-24 | 25+ | 16-24 | 25+ |
| Excellent | | | | |
| Good | | | | |
| Poor. | | | | |

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(Total for Question 4 is 9 marks)

- 5 Robin is going to design a new food court for the theatre.
He has this sketch of the space for the new food court.

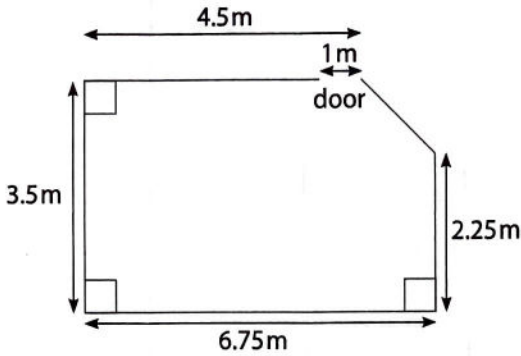
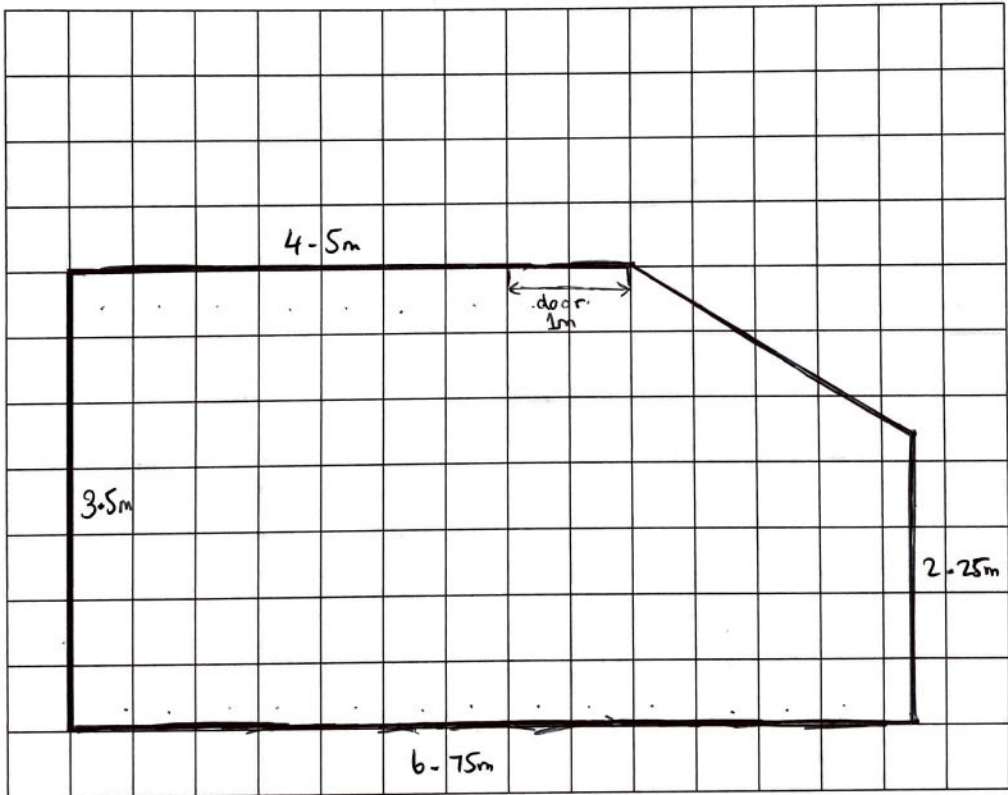


Diagram **not** accurately drawn

Robin starts a scale drawing of this space.

Complete the scale drawing for Robin.
Remember to fill in the key.

(4)



Key 1 square length on the page is 0.5 m in the food court in the theatre
 3.5 m edge

(Total for Question 5 is 4 marks)

- 6 Catherine sells bags of popcorn at the theatre.
The bags come in three sizes.

small
60g
£1.49

medium
150g
£3.99

large
250g
£5.99

Catherine thinks the medium bag of popcorn is the best value for money.

Is the medium bag of popcorn the best value for money?

(3)

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

$$\frac{£1.49}{60g} = £0.0248\bar{3} /g \quad (\text{small}).$$

$$\frac{£3.99}{150g} = £0.02660/g \quad (\text{medium}).$$

$$\frac{£5.99}{250g} = £0.02396 /g \quad (\text{large}).$$

⇒ Large bag is the best
value for money, so no.

(Total for Question 6 is 3 marks)

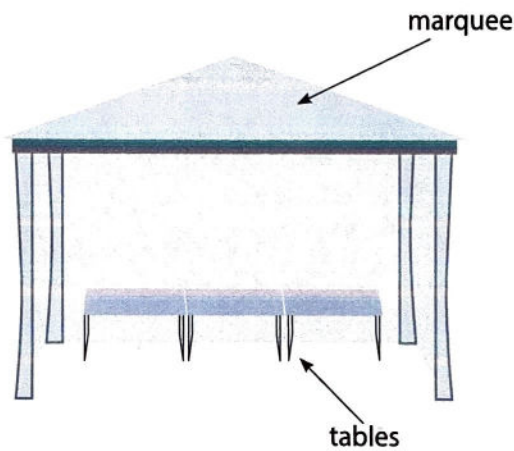
SECTION C: Garden party**Answer all questions in this section.****Write your answers in the spaces provided.**

7 Fez and Zoe are organising a garden party for their wedding anniversary.

Fez wants to hire a marquee for 2 days.

He finds information about some marquees.

| marquee | A | B | C |
|---------------------|------------|------------|------------|
| size (L by W) | 6 m by 3 m | 3 m by 3 m | 4 m by 4 m |
| hire charge per day | £67 | £59 | £74 |
| delivery and set up | £49.95 | £41.99 | £39.99 |



The marquee needs to be big enough to fully cover

- 3 rectangular tables, each 150 cm by 90 cm, joined together along the same edge (short edge or long edge) with no gap between them
- 50 cm free space around the joined tables for people to walk around.

Fez wants to spend the least amount of money for the marquee hire, delivery and set up.

- (a) Which marquee should Fez choose?
Show why you think this.

(5)

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

$$3 \times 150\text{cm} = 450\text{cm} = 4.5\text{m.} \quad (\text{joined at } \overset{\text{short}}{\text{long}} \text{ edge}).$$
$$\rightarrow 5.5\text{m total}$$

$$3 \times 90\text{cm} = 270\text{cm} = 2.7\text{m.} \quad (\text{joined at } \overset{\text{long}}{\text{short}} \text{ edge})$$
$$\rightarrow 3.7\text{m total.}$$

\Rightarrow Marquee B is not feasible.

$$\text{Marquee A: } (2 \times \pounds 67) + \pounds 49.95 = \pounds 183.95$$

$$\text{Marquee C: } (2 \times \pounds 74) + \pounds 39.99 = \pounds 187.99$$

\Rightarrow Marquee A is the best choice.

Fez needs to organise some food for the party.

There will be 80 people at the party.

A catering company has this offer for hot meals

| | |
|----------------|-------------------|
| non-vegetarian | £19.95 per person |
| vegetarian | £14.95 per person |

Special offer
get $\frac{1}{3}$ off your total bill

Fez uses this offer.

He will order vegetarian meals for 49 people and non-vegetarian meals for the remaining people.

Fez has a budget of £1000 for all the meals.

(b) Is £1000 enough for all the meals?

(4)

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

$$80 - 49 = 31 \text{ non-veg meals.}$$

$$\overset{\text{veg}}{(49 \times £14.95)} + \overset{\text{non-veg}}{(31 \times £19.95)}$$

$$= £1351$$

$$1 - \frac{1}{3} = \frac{2}{3}$$

$$£1351 \times \frac{2}{3} = £900.67,$$

Yes, £1000 is enough.

(Total for Question 7 is 9 marks)

- 8 Zoe needs to do some things before the party.
This is her list.

- 11:45 am hair appointment at salon (one and a half hours)
- then collect the cake from the bakery (10 minutes)
- finally, buy decorations at the arcade (a quarter of an hour)

She knows that it takes

- 13 minutes to drive from the salon to the bakery
- 12 minutes to drive from the bakery to the arcade
- 16 minutes to drive from the arcade to her home.

These times include time to park her car.

Zoe wants to do all the things on the list and return home by 2:30 pm.

Can Zoe do all the things on the list and return home by 2:30 pm?

(3)

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

$$\begin{aligned}
 & 1.5 \text{ hr} + 10 \text{ min} + 0.25 \text{ hr} + 13 \text{ min} + 12 \text{ min} + 16 \text{ min} \\
 & = 90 + 10 + 15 + 13 + 12 + 16 \text{ mins} \\
 & = 156 \text{ mins} = 2 \text{ hr } 36 \text{ mins.}
 \end{aligned}$$

$$\begin{aligned}
 11:45 \text{ am} + 2 \text{ hr } 36 \text{ min} & = 13:45 + 36 \text{ min} \\
 & = 14:21.
 \end{aligned}$$

Yes, she can.

(Total for Question 8 is 3 marks)

9 Zoe prepares some lemonade for the party.

She needs to use $\frac{3}{4}$ of a kilogram of sugar.

Zoe knows that 1 kg is 2.2 pounds.

- (a) What is $\frac{3}{4}$ of a kilogram in pounds?
Show a check of your working.

(3)

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

$$0.75 \text{ kg} \times 2.2 = 1.65 \text{ lbs.}$$

Use the box below to show your check.



$$\frac{1.65}{2.2} = 0.75 = \frac{3}{4}.$$

Fez has 150 balloons in a bag.
There are 43 red balloons, 67 blue balloons and 40 yellow balloons.

Fez takes one balloon at random from the bag.

(b) What is the probability that the balloon he takes will be blue?

(1)

Use the box below to show your answer.

$$\frac{67}{150} .$$

(Total for Question 9 is 4 marks)

TOTAL FOR PAPER IS 48 MARKS

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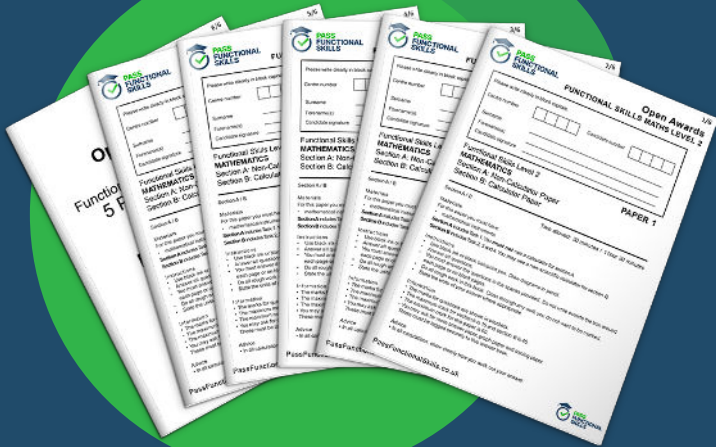
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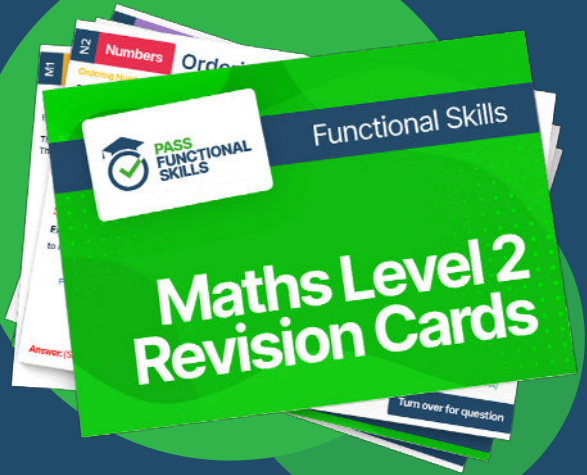
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