

Write your name here

Surname <i>meta@jstmaths.co.uk</i>	Other names
---------------------------------------	-------------

**Pearson Edexcel** Centre Number 

--	--	--	--	--

 Candidate Number 

--	--	--	--	--

**Mathematics** *Worked Solutions*  
**Paper 3 (Calculator)** *(There may be other methods too!)*  
 Achieving a Grade 3 **Foundation Tier**

<b>Spring 2023 Practice Paper</b> 31 marks 30 minutes	Paper Reference <b>1MA1/3F</b>
--	-----------------------------------

**You must have:** Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks
-------------

### 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.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- You must **show all your working.**
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- **Calculators may be used.**
- If your calculator does not have a  $\pi$  button, take the value of  $\pi$  to be 3.142 unless the question instructs otherwise.



### Information

- The total mark for this paper is 31. There are 11 questions.
- This paper assumes students have worked through the “Achieving a Grade 1 and Grade 2 papers” and as a result may have already seen a small number of these questions.
- All the questions are placed in ascending order of mean difficulty as found by students achieving Grade 3 in the Summer and November 2022 examinations.
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*

### Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Answer ALL ELEVEN questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 (a) Expand  $3(4 - 2x)$

$$\begin{aligned} 3 \times 4 &= 12 \\ 3x - 2 \times x &= -6x \end{aligned}$$

$$\dots\dots\dots 12 - 6x \quad (1)$$

(b) Solve  $\frac{3y}{4} = 12$

$$\begin{aligned} 3y &= 48 \\ y &= \frac{48}{3} = 16 \end{aligned}$$

$$y = \dots\dots\dots 16 \quad (2)$$

(Total for Question 1 is 3 marks)

2 Jo is going to buy 15 rolls of wallpaper.

Here is some information about the cost of rolls of wallpaper from each of two shops.

<p><b>Chic Decor</b></p> <p>3 rolls for £36</p>
---

<p><b>Style Papers</b></p> <p>Pack of 5 rolls normal price £70</p> <p>12% off the normal price</p>
--

Jo wants to buy the 15 rolls of wallpaper as cheaply as possible.

Should Jo buy the wallpaper from Chic Decor or from Style Papers?

You must show how you get your answer.

$$\begin{aligned} 3 \text{ rolls} &= \text{£}36 \\ \times 5 & \qquad \times 5 \\ 15 \text{ rolls} &= \text{£}180 \end{aligned}$$

$$\begin{aligned} 5 \text{ rolls} &= \text{£}70 \\ \times 3 & \qquad \times 3 \\ 15 \text{ rolls} &= \text{£}210 \end{aligned}$$

$$12\% = 210 \times 0.12 = 25.20$$

$$\begin{aligned} \text{Cost} &= 210 - 25.20 \\ &= 184.80 \end{aligned}$$

She should buy from Chic Decor

(Total for Question 2 is 4 marks)

3 Here is a list of ingredients for making 10 scones.

5  
40g  
175g  
15g  
1 egg

Ingredients for 10 scones
80 g butter
350 g self-raising flour
30 g sugar
2 eggs

20 scones  
160  
700  
60  
4

Martin has

100 g butter  
1 kg self-raising flour  
50 g sugar  
4 eggs

Martin wants to make 25 scones.

He has not got enough of some of the ingredients.

Work out how much more of each of these ingredients he needs.

Butter needs  $40 + 160 = 200\text{g}$   
has  $100\text{g}$  so must buy  $100\text{g}$ .

Flour needs  $700 + 175 = 875\text{g}$   
has  $1000\text{g}$  so has enough

Sugar needs  $60 + 15 = 75\text{g}$   
has  $50\text{g}$  so must buy  $25\text{g}$

Eggs needs 5. so needs 1 egg

(Total for Question 3 is 4 marks)

4 Write 19.4949 correct to the nearest whole number.

19      19.5  
          ↑ ↑  
          ↑   

20

19

(Total for Question 4 is 1 mark)

5

$$\mathbf{a} = \begin{pmatrix} 2 \\ 3 \end{pmatrix} \quad \mathbf{b} = \begin{pmatrix} -1 \\ 2 \end{pmatrix} \quad \mathbf{c} = \begin{pmatrix} 4 \\ 1 \end{pmatrix}$$

Work out as a column vector

(i)  $\mathbf{a} + \mathbf{b}$

$$\begin{matrix} 2 - 1 \\ 3 + 2 \end{matrix} = \begin{pmatrix} 1 \\ 5 \end{pmatrix}$$

$$\begin{pmatrix} 1 \\ 5 \end{pmatrix}$$

(1)

(ii)  $2\mathbf{a} - \mathbf{c}$

$$2\mathbf{a} = \begin{matrix} 4 \\ 6 \end{matrix} \quad \begin{matrix} 4 - 4 \\ 6 - 1 \end{matrix} = \begin{matrix} 0 \\ 5 \end{matrix}$$

$$\begin{pmatrix} 0 \\ 5 \end{pmatrix}$$

(2)

(Total for Question 5 is 3 marks)

6

There are 400 counters in a box.

The counters are red or yellow or green.

$\frac{3}{8}$  of the counters are red.

82 of the counters are yellow.

What percentage of the counters are green?

$$\begin{matrix} & & 400 & & \\ & R & & Y & \\ & & 4 & & G \end{matrix}$$
$$\frac{3}{8} = 400 \div 8$$
$$= 150$$
$$= 82$$

$$400 - (150 + 82)$$
$$= 400 - 232$$
$$= 168$$

$$\% \text{ green} = \frac{168}{400} \times 100$$
$$= 42$$

42

.....%  
(Total for Question 6 is 4 marks)

- 7 2.5 kg of onions and 2 kg of carrots cost a total of £2.36  
3 kg of carrots cost £1.74

Stuart has £2

He wants to buy 4 kg of onions.

Does Stuart have enough money to buy 4 kg of onions?

You must show how you get your answer.

$$\begin{array}{r}
 \text{Onions} \\
 2.5\text{kg}
 \end{array}
 +
 \begin{array}{r}
 \text{Carrots} \\
 2\text{kg}
 \end{array}
 = 2.35$$

$$\begin{array}{r}
 3\text{kg} \\
 \div 3 \\
 1\text{kg}
 \end{array}
 = 1.74$$

$$\begin{array}{r}
 1\text{kg} \\
 \div 3 \\
 0.58
 \end{array}
 = 0.58$$

so

$$\begin{array}{r}
 2\text{kg} \\
 \div 3 \\
 1.16
 \end{array}
 = 1.16$$

$$\begin{array}{r}
 2.5\text{kg} \\
 + \\
 1.16
 \end{array}
 = 2.36$$

$$\begin{array}{r}
 2.5\text{kg} \\
 2.5\text{kg} \\
 \div 2.5 \\
 1\text{kg}
 \end{array}
 = 1.20$$

$$\begin{array}{r}
 1.20 \\
 \div 2.5 \\
 0.48
 \end{array}
 = 0.48$$

$$4\text{kg of onions} = 0.48 \times 4 = \underline{\underline{\pounds 1.92}}$$

so yes he has enough.  
 $\pounds 2 > \pounds 1.92$

(Total for Question 7 is 5 marks)

8 Write 2530 correct to 2 significant figures.

2530

2500

.....  
(Total for Question 8 is 1 mark)

9 Work out the lowest common multiple (LCM) of 24 and 56

$$24 = \underline{2} \times \underline{2} \times \underline{2} \times 3 \qquad 56 = \underline{2} \times \underline{2} \times \underline{2} \times 7$$

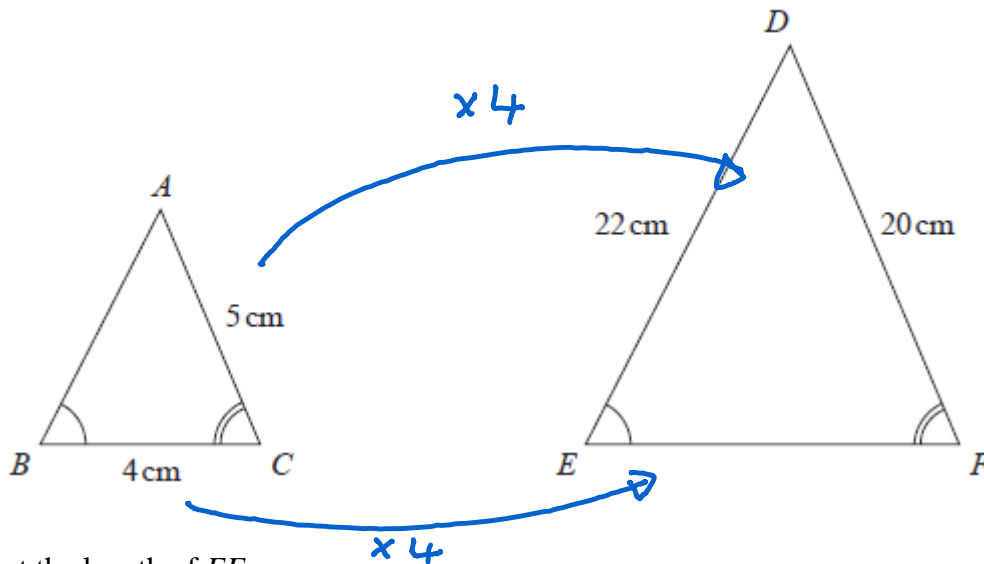
HCF

$$\text{LCM} = 8 \times 3 \times 7$$
$$= 168$$

168

.....  
(Total for Question 9 is 2 marks)

10 Triangle  $ABC$  and triangle  $DEF$  are similar.



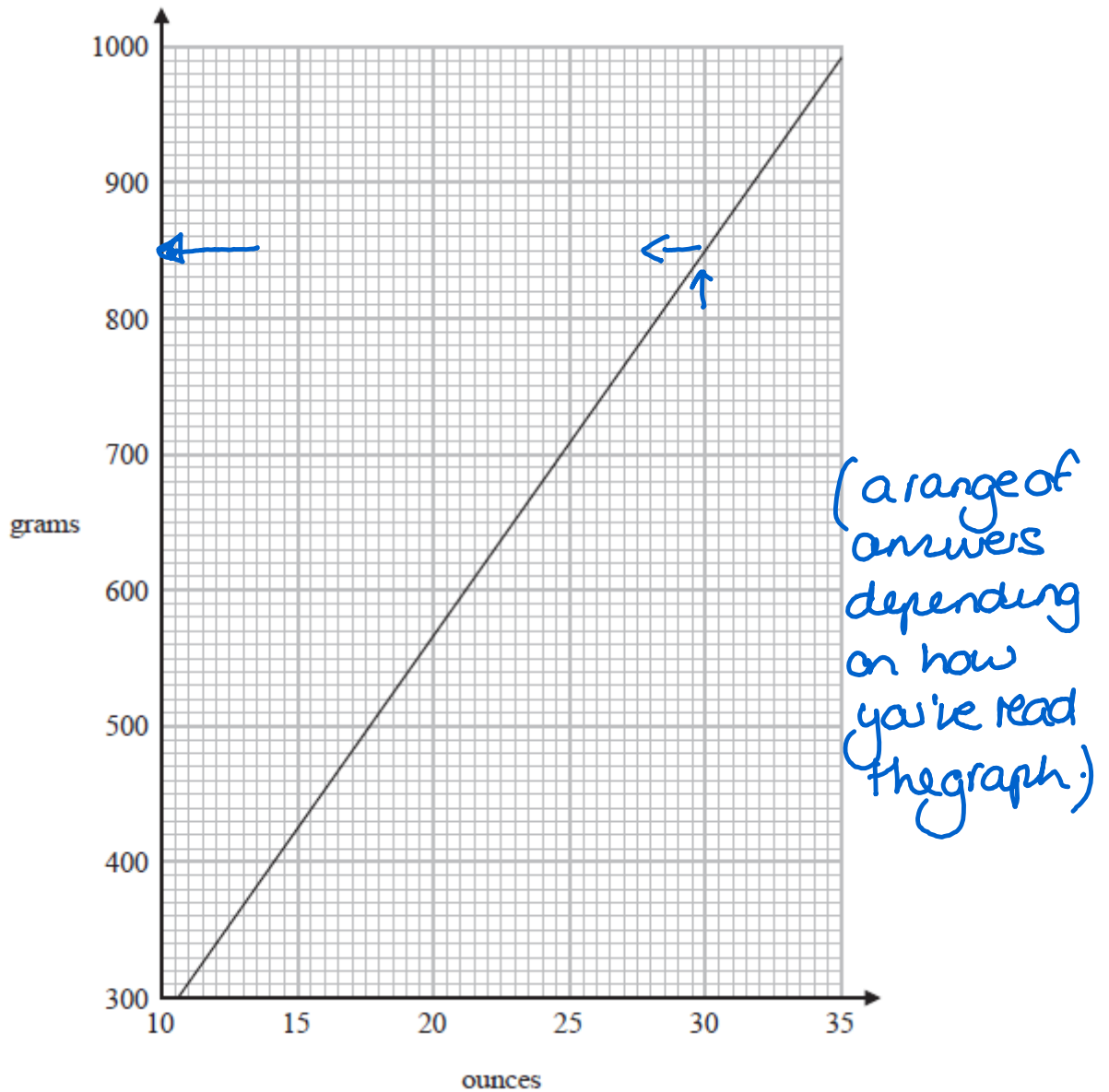
Work out the length of  $EF$ .

$$4 \times 4 = 16$$

16

..... cm  
(Total for Question 10 is 2 marks)

11 You can use this graph to change between ounces and grams.



Change 80 ounces to grams.

$$\begin{array}{l}
 30 \text{ ounces} = 850\text{g} \\
 \div 30 \\
 \times 80 \\
 \hline
 80 \text{ ounces}
 \end{array}$$

$$850 \div 30 \times 80 = 2266.6$$

2267 ..... grams  
 (Total for Question 11 is 2 marks)

TOTAL FOR PAPER IS 31 MARKS

range accepted  
 2238 to 2296