MJ REV

Q4.
Q5 DONE

edexcel

GCSE Mathematics Practice Tests: Set 4

Paper 1F (Non-calculator)

Time: 1 hour 30 minutes

You should have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.

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.*
- **Calculators must not be used.**
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- You must **show all your working out.**

Information

- The total mark for this paper is 80
- 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.

Simplifying Algebraic Expressions

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1. Simplify $3f - 2f + f$

3lots - 2lots + 1lot = 2lots

2f

.....

(Total 1 mark)

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2. (a) Write down the value of the **6** in the number 26 780

Place Value

6000

.....

(1)

(b) Write the number 6749 to the nearest hundred.

Rounding

4 rounds down

6 700

.....

(1)

(c) Write 0.0763 correct to **one** significant figure.

6 round 5 up

0.08

.....

(1)

(Total 3 marks)

Timetables

3. Here is part of a railway timetable.

New Street	10 13	10 30	10 33
Marston Green	10 26	↓	10 41
Birmingham International	10 29	10 39	10 45
Hampton-in-Arden	10 32	↓	10 48
Tile Hill	10 40	↓	10 55
Coventry	10 47	10 49	11 00

(*a*) Work out how long the 10 13 train takes to go from New Street to Coventry.

10:47 - 10:13 = 34 minutes

34 ..... minutes

(1)

Harry is at Birmingham International.
He needs to be at Tile Hill by 11 00.

(*b*) What time is the latest train from Birmingham International he can catch?

10:45 .....

(1)

(Total 2 marks)

Tally Chart

4. Liz asks 20 people to name the flavour of chocolate they like best.

Here are her results.

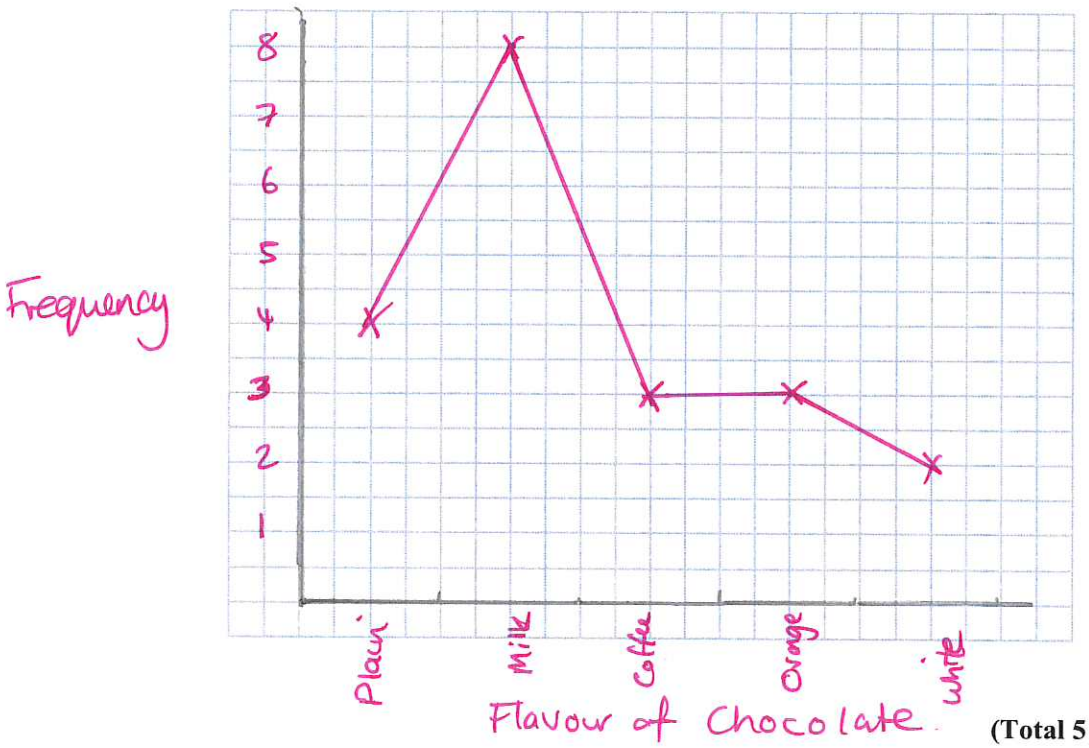
milk	plain	orange	plain	milk
coffee	white	milk	milk	orange
white	coffee	plain	milk	milk
milk	plain	coffee	milk	orange

(*a*) Complete the frequency table.

Flavour of chocolate	Tally	Frequency
plain	𝍸	4
milk	𝍸 𝍸 | | |	8
coffee	| | |	3
orange	| | |	3
white	| |	2

(2)

(*b*) On the grid, draw a suitable chart or diagram to show Liz's results. Line Graph



(3)

(Total 5 marks)

Worded Addition

5. Susan and Joe are going on holiday.
They can take two cases onto the plane free of charge if the total weight of the two cases is no more than 40 kg.

Susan's case has a weight of 22.8 kg.
Joe's case has a weight of 19.5 kg.

(*a*) Can they take their two cases onto the plane free of charge?

Add | 22.8kg (+)
19.5kg
42.3kg
1 1

Conclusion | No since 42.3kg > 40kg

(2)

Susan and Joe want to be at the airport terminal at 14 30.

It will take 1 hour and 20 minutes to drive from home to the airport.
It will then take a total of 30 minutes to park the car and go into the airport terminal.

(*b*) What is the latest time they can leave home?

WORK BACKWARDS... | 14:30 − 1hour 20 = 13:10

13:10 − 30minutes = 12:40

12:40
.....

(3)

(Total 5 marks)

Money Calculations

6. Sarah wants to buy some fruit.

She wants to buy

3 oranges at 30p each

and $\frac{1}{2}$ kg apples at £1.20 per kg.

The only money Sarah has is one 50p coin and six 20p coins.

She pays for the fruit.

Work out how much money Sarah has left.
You must show all your working.

oranges cost: $3 \times 30p = 90p$

Apples cost: $\frac{1}{2} \times £1.20 = 60p$

Total cost: $90p + 60p = £1.50$

Total money: $50p + (6 \times 20p)$

$= 50p + £1.20 = £1.70$

Remaining Money: $£1.70 - £1.50 = £0.20$

(Total 5 marks)

7. Tanaka says 'When you multiply an odd number and an even number together, you will always get an odd number'.

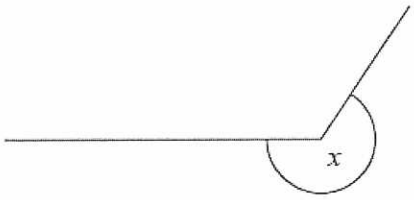
Show that Tanaka is wrong.

1 × 2 = 2 ∴ WRONG
odd even even

(Total 2 marks)

Angles

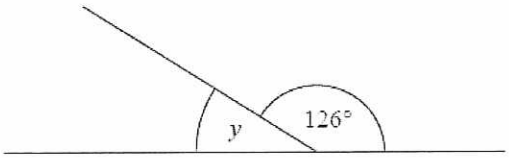
8.



(a) Write down the mathematical name for the type of angle marked x.

Between 180° and 360° ..... Reflex .....

(1)



(b) (i) Work out the size of the angle marked y.

7 1
180
126
54°

Angles on straight line = 180° | 180° − 126° = y

54° = 54°

.....

(ii) Give a reason for your answer.

Angles on straight line = 180°

.....

(2)

(c) Complete each statement correctly.

(i) The size of each angle of a rectangle is 90 °. 360 ÷ 4 = 90

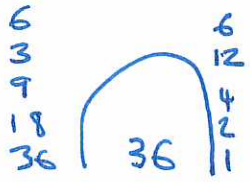
(ii) The size of each angle of an equilateral triangle is 60 °. 180 ÷ 3 = 60

(2)

(Total 5 marks)

Factors

9. (a) Find two factors of 36 with a difference of 5



Choose two with a difference of 5.

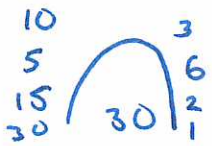
9 and 4

(2)

The Lowest Common Multiple (LCM) of three numbers is 30
Two of the numbers are 2 and 5

Lowest Common Multiple

(b) What could be the third number?



15

(2)

(Total 4 marks)

Fractions / Percentages of an Amount

10. Debbie, Salma and Wendy did a Maths test.
The total for the test was 40 marks.

Debbie got 16 out of 40

Salma got 35% of the 40 marks.

Wendy got $\frac{3}{8}$ of the 40 marks.

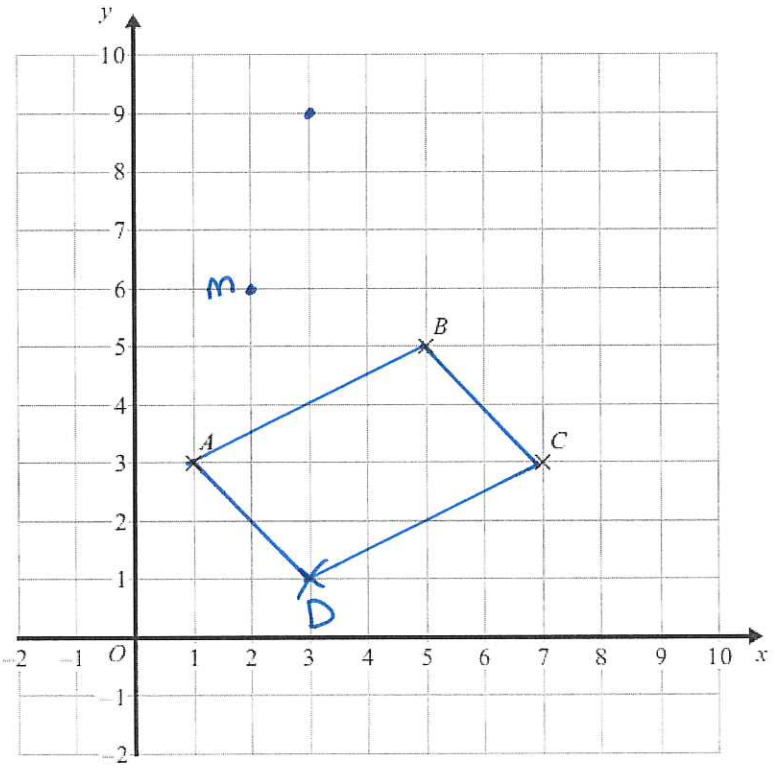
Who got the highest mark?
You must show all your working.

Debbie	16 marks
Salma	35% of 40... 10% = 4 30% = 12 5% = 2 (+) = 14 marks
Wendy	$\frac{3}{8}$ of 40... $\frac{1}{8}$ = 5 $\frac{3}{8}$ = 15 marks
Conclusion	Debbie got the highest mark.

(Total 4 marks)

2D Shapes and Coordinates

11.



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

(7 , 3)

(1)

(b) Find the coordinates of point *D* so that *ABCD* is a parallelogram. → 2 sets of equal, parallel sides.

(3 , 1)

(1)

E is another point on the grid.
The midpoint of *AE* has coordinates (2, 6)

(c) Find the coordinates of point *E*.

From A to M = 1 right, 3 up

(3 , 9)

(2)

(Total 4 marks)

∴ M to E = 1 right, 3 up

∴ A to E = 2 right, 6 up

Proportion

12. There are 11 counters in a bag.
6 of these counters are green.
5 of these counters are red.

Some more red counters are put into the bag.

A counter is then taken at random from the bag.

The probability that the counter is red is $\frac{3}{5}$

How many red counters were put into the bag?

$P(\text{Red}) = \frac{3}{5} = \frac{9}{15}$

∴ Need to find how many counters added to make 9 reds with 15 counters total.

5 reds at start

Try adding 4 reds ... = 9 reds ✓

5 reds, 6 green = 11 counters at start

Adding 4 gives 15 total ✓

∴ 4 Red Counters

4

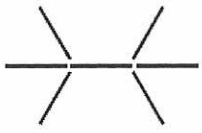
.....

(Total 3 marks)

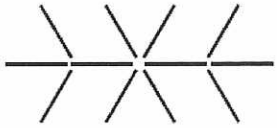
Number Patterns

13. Here is a sequence of patterns made from sticks.

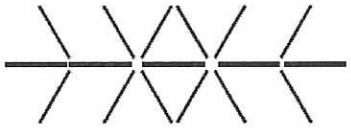
(a) Complete the table to show the number of sticks in each pattern.



Pattern number 1



Pattern number 2



Pattern number 3

Pattern number 4

Pattern number	1	2	3	4	5	6	7	8
Number of sticks	7	12	17	22	27	32	37	42

+5 +5 +5 +5 +5 +5 +5

(1)

(b) Find the number of sticks in Pattern number 8

42

.....

(1)

(c) Find an expression in terms of n for the number of sticks in Pattern number n.

nth term

Common difference = 5 ∴ 5n

0	1	2	3
2	7	12	17

-5

$\Rightarrow 5n+2$

.....

(2)

Ali has 60 sticks.
She wants to use as many sticks as possible to make a Pattern number.

(d) What is the largest Pattern number she can make?

Pattern	8	9	10	11	12
	42	47	52	57	62

∴ 11

11

.....

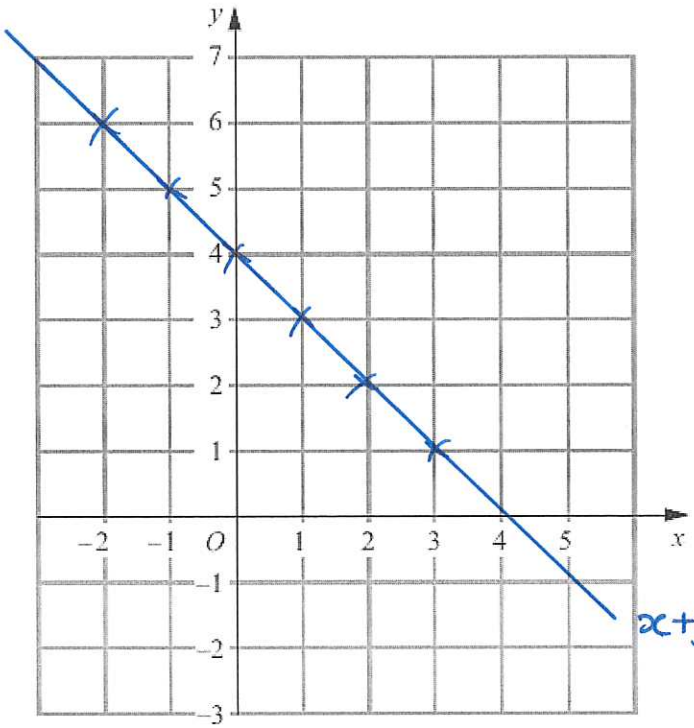
(2)

(Total 6 marks)

Plotting Straight Line Graphs

x	−2	−1	0	1	2
y	6	5	4	3	2

14. On the grid draw the graph of $x + y = 4$ for values of x from −2 to 5



(Total 3 marks)

Best Buy

15. Tom is going to buy 25 plants to make a hedge.
Here is information about the cost of buying the plants.

Kirsty's Plants	**Hedge World**
£2.39 each	Pack of 25 £52.50 plus VAT at 20%

Tom wants to buy the 25 plants as cheaply as possible.

Should Tom buy the plants from Kirsty's Plants or from Hedge World?
You must show all your working.

Kirsty's plants

£2.39 × 25

(×100) = 239 × 25

239 × 25

£1195

£4780

£59.75

(÷100)

= £59.75

Hedge World

100% = £52.50

(÷10) 10% = £5.25

(×2) 20% = £10.50

∴ Cost = £52.50 + £10.50

= £63.00

∴ Tom should buy from Kirsty's plants since £59.75 < £63.00

(Total 5 marks)

Mass Density Volume

7.

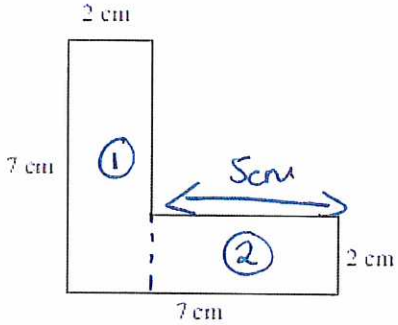


Diagram **NOT** accurately drawn

CSA = Cross-Sectional Area

The diagram shows the cross-section of a solid prism.
The length of the prism is 2 m. = 200 cm

The prism is made from metal.
The density of the metal is 8 grams per cm^3.

Work out the mass of the prism.

$m = D \times V$

$V = CSA \times Length$

CSA ...

$CSA = Area\ ① + Area\ ②$

$= (7cm \times 2cm) + (5cm \times 2cm)$

$= 14cm^2 + 10cm^2$

$= 24cm^2$

$V = CSA \times Length$

$V = 24cm^2 \times 200cm$

$= 4800\ cm^3$

$m = D \times V$

$m = 4800cm^3 \times 8g/cm^3$

$m = 38400\ g$

4800 × 8 = 38400

38400g

(Total 5 marks)

Relative Frequency

2. There are 50 counters in a bag.

The counters are blue or yellow or black or white.
A counter is taken at random from the bag.

The table shows each of the probabilities that the counter will be blue or black or white.

Colour	blue	yellow	black	white
Probability	0.4	0.14	0.3	0.16

Work out the number of yellow counters in the bag.

Sum of all probabilities = 1

$P(\text{yellow}) = 1 - 0.4 - 0.3 - 0.16$

$= 0.3 - 0.16$

$= 0.14$

Relative Frequency

$0.14 \times 50 = 1.4 \times 5$

$= 7$

$1.4 \times 5 = 7.0$

7

.....

(Total 4 marks)

Estimation

18. Work out an estimate for the value of

$$\frac{6.8 \times 191}{0.051}$$

$6.8 \simeq 7$

$191 \simeq 200$

$0.051 \simeq 0.05$

$$\frac{6.8 \times 191}{0.051} \simeq \frac{7 \times 200}{0.05}$$

$$= \frac{1400}{0.05} = \frac{140000}{5}$$

$$5 \overline{)140000} = 28000$$

(Total 3 marks)

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19. The normal price of a television is reduced by 30% in a sale.

Reverse Percentages

The sale price of the television is £350

Work out the normal price of the television.

$100\% - 30\% = 70\%$

£350 $= 70\%$

(÷7) £50 $= 10\%$

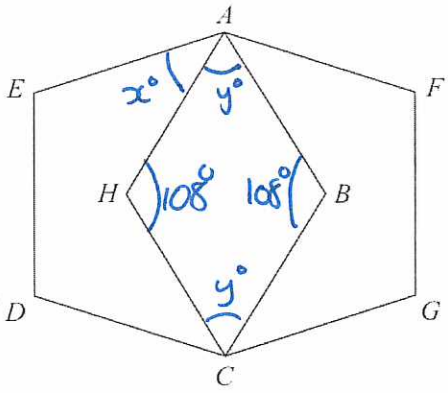
(×10) £500 $= 100\%$

£ 500

(Total 3 marks)

Angles in Polygons

20.



ABCDE and *AFGCH* are regular pentagons.
The two pentagons are the same size.

Work out the size of angle *EAH*.
You must show how you got your answer.

$A\hat{B}C = A\hat{H}C = 108°$

$B\hat{A}H = B\hat{C}H = y° = \frac{360° - 108° - 108°}{2}$

$= 72°$

$x° + y° = 108°$

$\therefore x° + 72° = 108°$

$x = 36°$

Sum of interior angles in a pentagon $= 540°$, $540° \div 5 = 108°$

Angles in a quadrilateral (ABCH) $= 360°$

Since $x° + y°$ is an internal angle of a pentagon

$(-72°)$

36 .....°

(Total 4 marks)

Speed Distance Time

12. Harry travels from Appleton to Brockley at an average speed of 50 mph.
He then travels from Brockley to Cantham at an average speed of 70 mph.

Harry takes a total time of 5 hours to travel from Appleton to Cantham.
The distance from Brockley to Cantham is 210 miles.

Calculate Harry's average speed for the total distance travelled from Appleton to Cantham.

Journey 1 (A → B)	Journey 2 (B → C)	Total (A → C)
S = 50mph	S = 70mph	S = ??? (5)
D = 100miles (3)	D = 210miles	D = 310miles (4)
T = 2hours (2)	T = 3hours (1)	T = 5hours

(1) $T = \frac{D}{S} = \frac{210\text{miles}}{70\text{mph}} = 3\text{hours}$

(2) 5hours − 3hours = 2hours

(3) $D = S \times T = 50\text{mph} \times 2\text{hours} = 100\text{miles}$

(4) 100miles + 210miles = 310miles

(5) $S = \frac{D}{T} = \frac{310\text{miles}}{5\text{hours}}$

$= 62\text{mph}$

62 ..... mph

(Total 4 marks)