TQUK Functional Skills Qualification in Maths at Level 2

Examination Paper (Sample Assessment Paper 1)

Please complete the details below using black or blue ink. Use BLOCK CAPITALS.

Learner Name: _____

Learner Number: _____

Date: _____

Centre Name: _____

Instructions:

- Read each question **carefully**
- Answer **all** questions
- Write your answers **clearly** in the spaces provided
- **Check** your answers.

Information:

- This examination has **two** sections. These are clearly labelled
- You are **not allowed** to use a calculator for Section A
- You **are allowed** to use a basic calculator for Section B
- The **maximum** mark for this examination is 60
- The marks available for each question are shown in **bold** beneath each question.

Items:

- You **will need** a pen with black or blue ink, a pencil, a ruler and an eraser (for diagrams, graphs and charts only)
- You **will need** a basic calculator for Section B only
- You **will need** a compass
- You **will not** need any other stationery or equipment.

Time allowed:

30 minutes for Section A (Non-calculator)
90 minutes for Section B (Calculator)

Do not open this examination paper until you are told to do so.

For examiner use only

	Marks available	Marks awarded	Second marks
Section A	15		
Section B	45		
Total marks	60		

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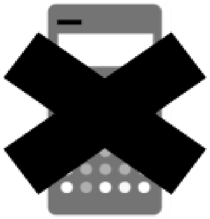
Section A: Non-calculator



There are **15 marks** available in this section.
You must **not** use a calculator in this section.
You will have **30 minutes** to complete this section.

1. Work out 4.002 × 3.5

```
   4 0 0 2
 ×     3 5
 ---------
+ 2 0 0 1 0
 1 2 0 0 6 0
 -----------
 1 4 0 0 7 0
```

14·0070

Answer	14·007

[1]

2. Work out 12 as a fraction of 60

Give your answer in its simplest form.

$\frac{12}{60} = \frac{1}{5}$ (÷12)

Answer	$\frac{1}{5}$

[1]

3. Write 3 806 265 in words.

Answer	Three million, eight hundred and six thousand, two hundred and sixty five

[1]

Questions continue on the following page

4. Put these numbers in order starting with the lowest:

0.77 0.701 0.72 0.707 0.077

Show any working here:					
Answer	0·077	0·701	0·707	0·72	0·77
	Lowest	→			**Highest**

[1]

5. Alex pays £435.50 rent each month.

Next month the rent is increasing by 2%.

How much will Alex's rent be next month?

Show your working.

1% of £435·50 = £4·3550 (×2)

2% of £435·50 = £8·71 (×2)

New price is £435·50 + £8·71

= £444·21

4355 × 2 = 8710

435·50 + 8·71 = 444·21

Answer	£444·21

[2]

6. Taylor buys a piece of wood to make a photo frame.

Taylor uses:

- $\frac{2}{3}$ of the wood for one part of the frame
- $\frac{1}{5}$ of the wood for another part.

What fraction of the wood is left over?

$1 - \left(\frac{2}{3} + \frac{1}{5}\right)$

$= 1 - \left(\frac{10}{15} + \frac{3}{15}\right)$

$= 1 - \frac{13}{15}$

$= \frac{2}{15}$

Answer	$\frac{2}{15}$

[3]

Questions continue on the following page

7. Remy drives 154 miles.

It takes 3 hours and 30 minutes.

Remy thinks their average speed was more than 40 miles per hour.

Is Remy correct?

Show how you decide.

3 hrs 30 mins = 3·5 hrs

speed = distance ÷ time
= 154 ÷ 3·5
= 44 mph

↑
Yes, faster than 40 mph

154 ÷ 3·5 = 1540 ÷ 35

$$35\overline{)1540}\quad 44$$

35, 70, 105, 140, 175

Answer	Yes

[3]

8. The table shows the number of stars awarded by some friends to a video game:

Number of stars	Frequency	midpoint	midpoint × frequency
1 – 3	16	2	2 × 16 = 32
4 – 6	5	5	5 × 5 = 25
7 – 9	9	8	8 × 9 = 72
total :	30		total : 129

Work out the estimated mean number of stars awarded.

mean = 129 ÷ 30
= 4 · 3

30) 129 · 000 = 004 · 3

30, 60, 90, 120, 150

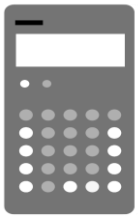
Answer 4 · 3

[3]

End of Section A.

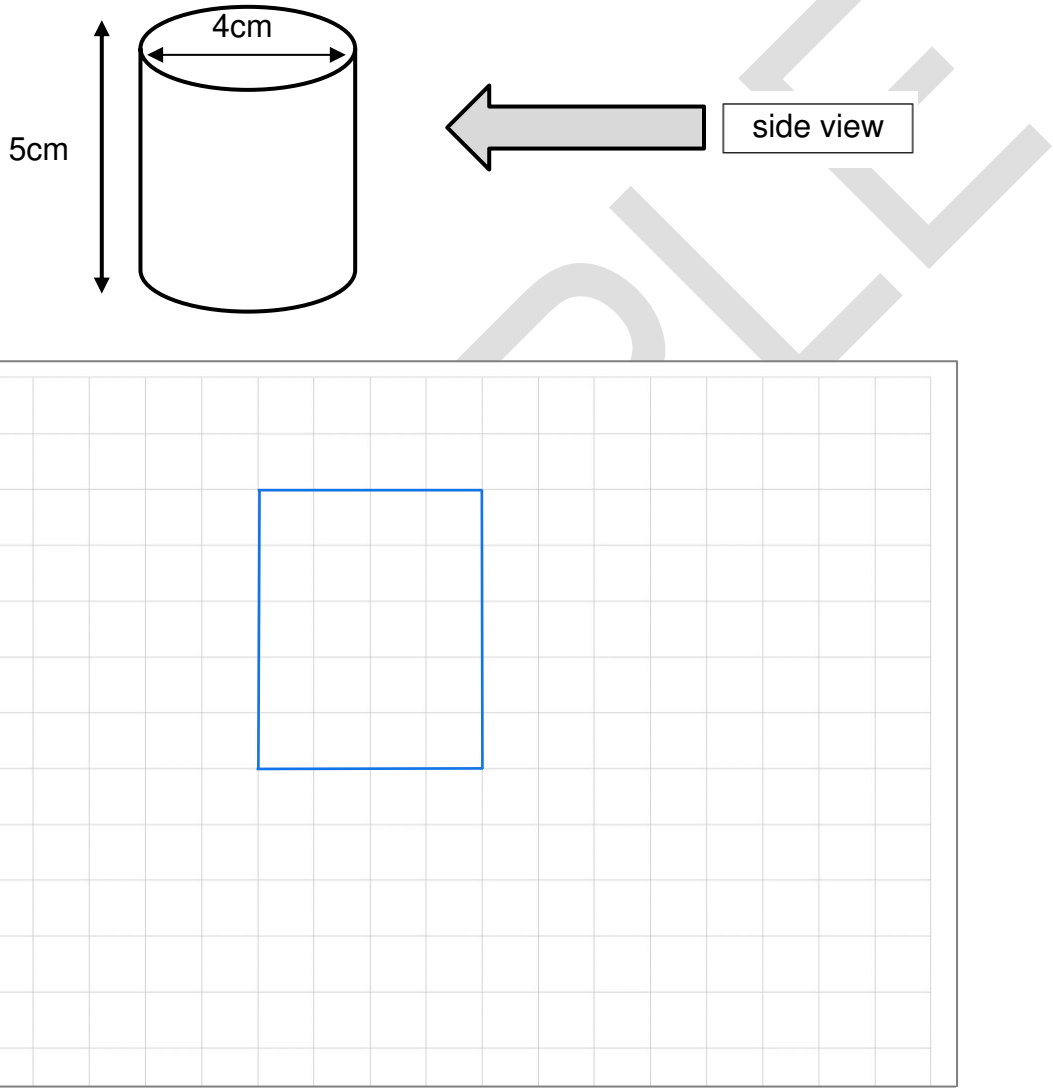
Section B begins on Page 7.

Section B: Calculator



There are **45 marks** available in this section.
You **can** use a basic calculator in this section.
You will have **90 minutes** to complete this section.

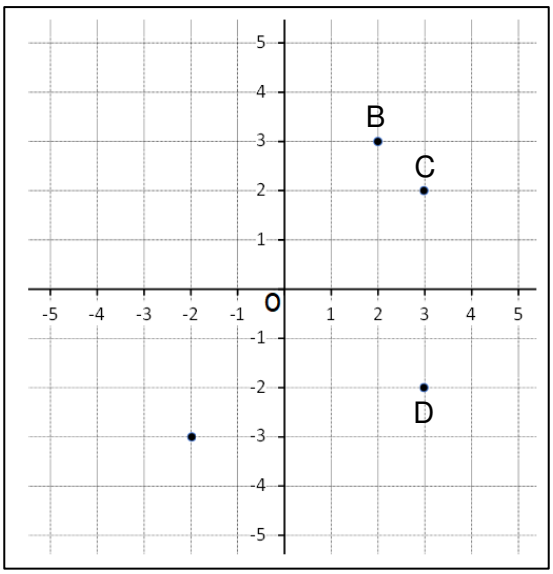
1. Draw to scale the side view of this cylinder on this cm square grid:



[1]

Questions continue on the following page

2. Which of these points has the coordinates (2, 3)?



Answer	B

[1]

3. Put these numbers in order starting with the lowest:

–102 498 1 200 956 1 204 812 –82 548 1 024 812

Show any working here:					
Answer	−102 498	−82 548	1024 812	1 200 956	1204812
	Lowest	→			**Highest**

[1]

4. Calculate:

$$\frac{2.5^2 + 1.5^2}{2.5^2 - 1.5^2}$$

$= \frac{6.25 + 2.25}{6.25 - 2.25}$

$= \frac{8.5}{4}$

$= 2.125$

$2.5^2 = 2.5 \times 2.5 = 6.25$

$1.5^2 = 1.5 \times 1.5 = 2.25$

Answer	2.125

[2]

5. The world's largest clockface is circular.

It has a radius of 21.5 m.

Calculate the circumference of the circle.

Use π = 3.14

circumference $= 3.14 \times 2 \times 21.5$

$= 135.02$ m

Answer	135.02 m

[2]

Questions continue on the following page

6. A sports company sells red and blue tennis rackets.

343 980 customers bought tennis rackets last year in total.

51 597 of these customers bought red tennis rackets.

What percentage of customers bought blue tennis rackets?

343 980 − 51 597 = 292 383 bought blue

$\frac{292\,383}{343\,980} \times 100 = 85\%$

Answer	85 %

[2]

7. Keegan wants to buy a new fridge.

They see these two offers online:

Fridge A	Fridge B
$\frac{1}{8}$ off original price	18% off original price

Both fridges have the same original price.

Keegan wants to buy the cheaper fridge.

Which fridge should Keegan buy?

Show how you decide.

$\frac{1}{8} = 1 \div 8 = 0.125$

$18\% = 18 \div 100 = 0.18$ ← B has bigger discount

Answer	B

[2]

Questions continue on the following page

8. An airline asked passengers to complete a questionnaire on their flight.

The results are shown below:

		Age Group		
		Under 40 years old	**40 years old and above**	**Total**
First time flying?	**No**	199 915	246 021	445 936
	Yes	23 792	23 059	46 851
		223 707	269 080	492 787

One of the passengers who completed the survey will be chosen at random to receive a prize.

Monroe writes the probability that the winner of the prize would be 40 or over and a first-time flyer in a newsletter.

What is this probability?

Give your answer as a percentage.

$\frac{23059}{492787} \times 100 = 4.679\ldots\ \%$

Answer	4.7	%

[3]

9. A sales assistant has been asked to attend a meeting with their manager.

The manager sets a new target to increase the total amount of sales for this year by 12%. — 100% + 12% = 112% = 1·12

The manager asks the sales assistant to **estimate** whether the new target is more than £165 000

	Quarter 1 Jan - March	Quarter 2 April - June	Quarter 3 July - Sept	Quarter 4 Oct - Dec
Amount made in sales	£23 438 23 000	£36 824 37 000	£48 506 49000	£39 729 40 000

Is the new sales target more than £165 000?

Show how you decide.

estimated total = 23000 + 37000 + 49000 + 40000
= 149000

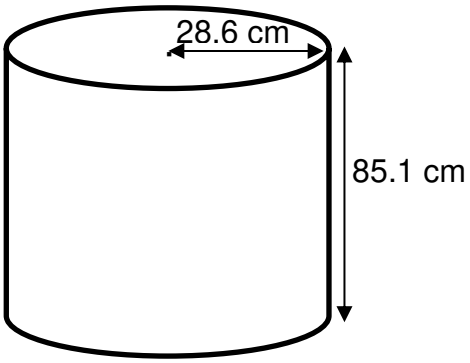
£149000 × 1·12 = £166880
↑
Yes, more than 165000

Answer	Yes

[4]

Questions continue on the following page

10. This is a sketch of an empty cylindrical barrel.



Not drawn to scale

Can the barrel hold 50 gallons of liquid?

1 litre is 1000 cm^3

1 gallon is 4.5 litres.

Use π = 3.14

Show your working.

Volume of barrel = $3.14 \times 28.6^2 \times 85.1$

$= 218\,570.3634\ cm^3$ ÷ 1000

$= 218.5703634$ litres ÷ 4.5

$= 48.571..$ gallons

↑

No, can't hold 50 gallons

Answer	No

[4]

11. The original price of an electric bike Quinn wants to buy is £2799

There is an 8% discount for a cash payment.

Quinn's bank will loan the discounted cash price.

The loan and any interest are paid back after 2 years.

The bank charges 4% per year compound interest.

How much will Quinn pay back to the bank in total?

Show your working.

8% discount so 100% − 8% = 92% = 0.92

Discounted price is £2799 × 0.92 = £2575.08

4% interest so 100% + 4% = 104% = 1.04 per year for 2 years

£2575.08 × 1.04 × 1.04 = £2785.2065...

£2785.21 to nearest pence

Answer	£ 2785.21

[4]

Questions continue on the following page

12. Rope A and Rope B were tested to find out which one is the stronger.

12 samples of rope A were chosen.

The greatest weight, in kg, that each sample could hold without breaking was recorded.

Here are the results:

3595	2974	3147	3311	3028	3072
3246	3072	3522	3527	3486	3167

Summarised below is the weight in kg that 12 different samples of Rope B were able to hold before breaking:

Mean weight held before breaking: 3172 kg

Range of weights: 213 kg

The manufacturer claims:

a. *'on average, Rope A can hold the greater weight before breaking'*
b. *'the 12 samples of Rope A were more consistent.'*

Is the manufacturer correct?

Show how you decide.

Show working here:

mean for A = 39147 ÷ 12
= 3262·25

range for A = 3595 − 2974
= 621

Reason - claim a)

Yes – Rope A has higher mean

Reason - claim b)

No – A has a higher range so less consistent

[4]

13. Ali is painting a room sea green.

Sea green is made from mixing blue paint and yellow paint in the ratio 5 : 2

The area to be painted is 65.8 m^2

Both blue and yellow paint are sold in 1 litre tins.

A litre of paint covers 12 m^2

How many tins of each colour paint will Ali need to buy?

Show your working.

5 + 2 = 7 parts total so ÷7 → 7 parts = 65.8 m^2 ÷7

1 part = 9.4 m^2

5 parts = 5 × 9.4 = 47 m^2 blue

2 parts = 2 × 9.4 = 18.8 m^2 yellow

Need 47 ÷ 12 = 3.916... litres of blue so 4 tins

Need 18.8 ÷ 12 = 1.566... litres of yellow so 2 tins

Blue paint	4	**tins**
Yellow paint	2	**tins**

[5]

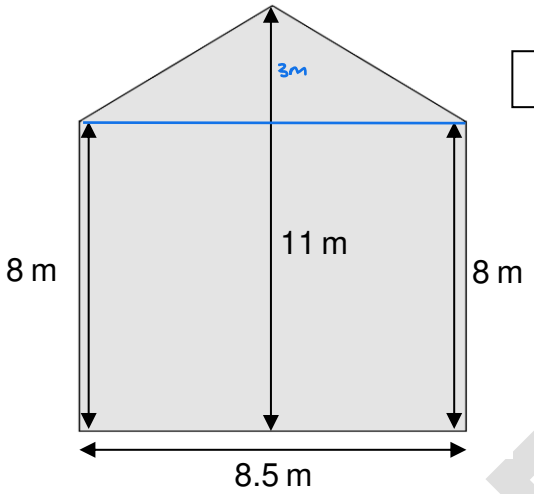
Questions continue on the following page

14. Stevie's friend had the rectangular end of their house covered with wooden boarding.

The area covered measured 4 m by 7 m.

The builder charged £1456

Stevie wants to cover the end of their house shown below with the same wooden boarding.



Not drawn to scale

Stevie estimates how much they can expect to pay.

Stevie thinks the builders will charge the same amount per square metre.

How much does Stevie estimate they can expect to pay?

Show your working.

Answer box is on the following page.

Area of rectangle = 8×8.5
$= 68\ m^2$

Area of triangle = $\frac{8.5 \times 3}{2}$
$= 12.75\ m^2$

total area = $68 + 12.75$
$= 80.75\ m^2$

Friend's boarding was $4 \times 7 = 28\ m^2$ so cost £1456 ÷ 28 = £52 per m^2

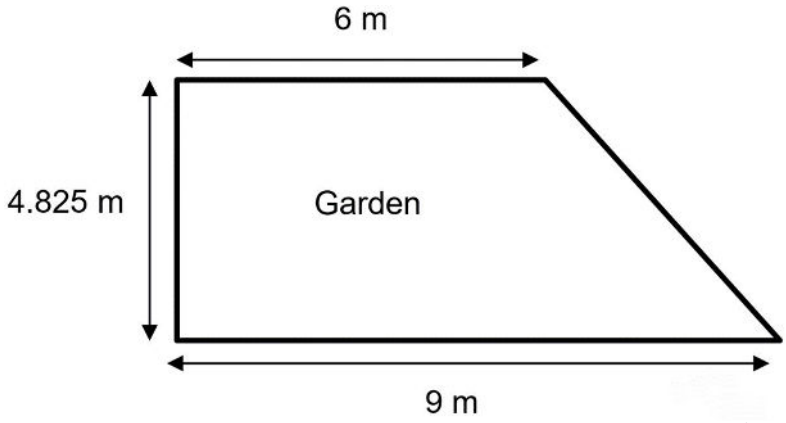
will cost Stevie £52 × 80.75 = £4199

Answer	£ 4199

[5]

Questions continue on the following page

15. Jesse is thinking about covering their garden with artificial grass.

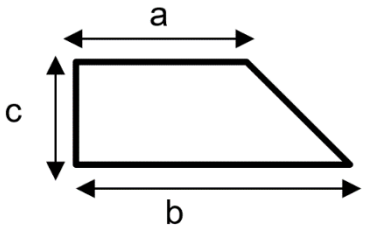


Jesse wants to determine how much it will cost.

Jesse uses this information to work out the area of the garden:

$$\text{Area of garden} = \frac{(a+b)c}{2}$$

Where:



Jesse searches online to find out the cost of the artificial grass per metre squared.

The results are shown in this table:

Option	Cost per metre squared
1	£14.99
2	£24.99
3	£19.99
4	£10.75
5	£17.00
6	£19.99
7	£15.50
8	£16.95
9	£19.99
10	£15.75
11	£10.95
12	£19.99

This question continues on the following page

Jesse uses the modal cost to determine how much it will cost to cover the garden with artificial grass.

Jesse thinks it will cost over £800

Is Jesse correct?

Show how you decide.

Area of garden $= \frac{(6+9) \times 4.825}{2} = 36.1875\ m^2$

modal cost is most common cost so £19.99 (appears 4 times)

It will cost £19.99 × 36.1875
= £723.39

↑
No, not over £800

Answer	No

[5]

This is the end of the assessment.