

8300

GCSE MATHEMATICS

Foundation and Higher tier – Questions by Topic

Number

Estimating calculations (calculator)

v1.0

Name _____

Materials

For this paper you must have:

- Mathematical instruments
- You may use a calculator



Information

- The marks for questions are shown in brackets

Advice

- In all calculations, show clearly how you work out your answer

Questions 1 to 12 are **foundation** tier only

Q1.

- (a) Use your calculator to work out $9.95^2 \times 29.8$
Give your answer as a decimal.
Write down your full calculator display.

(1)

- (b) Is your answer to part (a) sensible?
Use approximations to decide.
You **must** show your working.
Tick a box.

☐

Sensible

☐

Not sensible

(3)

(Total 4 marks)

Q2.

- (a) Use your calculator to work out the exact value of

$$\frac{18953 \times 437}{11}$$

(1)

- (b) Use approximations to 1 significant figure to check if your answer to part (a) is sensible.

(3)

(Total 4 marks)

Q3.

- (a) Use your calculator to work out $\frac{9.75^3}{1.875} + 6.4^2$
Give your answer as a decimal.
Write down your full calculator display.

(2)

- (b) Is your answer to part (a) sensible?
Check by rounding each of 9.75, 1.875 and 6.4 to the nearest whole number.
You **must** show your working.
Tick a box.

☐

Sensible

☐

Not sensible

(3)

(Total 5 marks)

Q4.

Connor is estimating the answer to $385 + 1479$

- (a) He rounds each number to the nearest 10
Work out his estimate.

(2)

- (b) Connor says,
“My estimate will be more than the exact answer.”
How does he know this **without working out the exact answer**?

(1)

(Total 3 marks)

Q5.

$$\frac{1}{(\sqrt[3]{8.34})^2 \times 10.21}$$

Millie is estimating the value of
She rounds each decimal number to 1 significant figure.

- (a) Work out Millie's estimate.

You **must** show your working.

(2)

- (b) Millie says,

“My estimate must be more than the exact value.”

Without working out the exact value, give a reason how she can know this.

(1)

(Total 3 marks)

Q6.

- (a) Use your calculator to work out $19.42^2 - \sqrt[3]{1006} \div 4.95$
Write down your full calculator display.

(1)

- (b) Use approximations to check that your answer to part (a) is sensible.
You **must** show your working.

(2)

(Total 3 marks)

Q7.

- (a) Work out $\sqrt{1.96}$

(1)

- (b) Work out $\frac{10.6 - 7.45}{2.5}$

(1)

(Total 2 marks)

Q8.

Use your calculator to work out $\frac{3.21 + 4.89}{5.62 - 1.89}$ as a decimal.

- (a) Write down your full calculator display.

(1)

- (b) Write your answer to 1 decimal place.

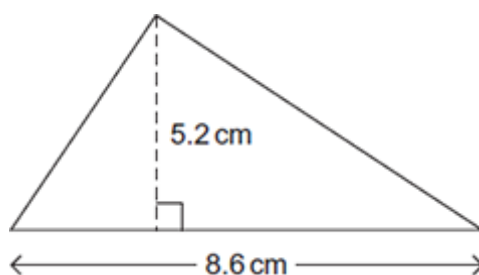
(1)

(Total 2 marks)

Q9.

Work out the area of the triangle.

Not drawn
accurately

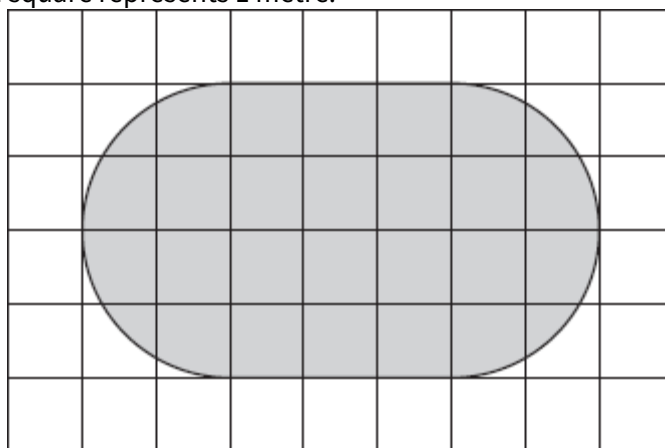


Give your answer to 1 decimal place.

(Total 3 marks)

Q10.

Jack drew this sketch of his lawn on squared paper.
The length of each square represents 1 metre.



Work out an estimate for the area of his lawn.

(Total 3 marks)

Q11.

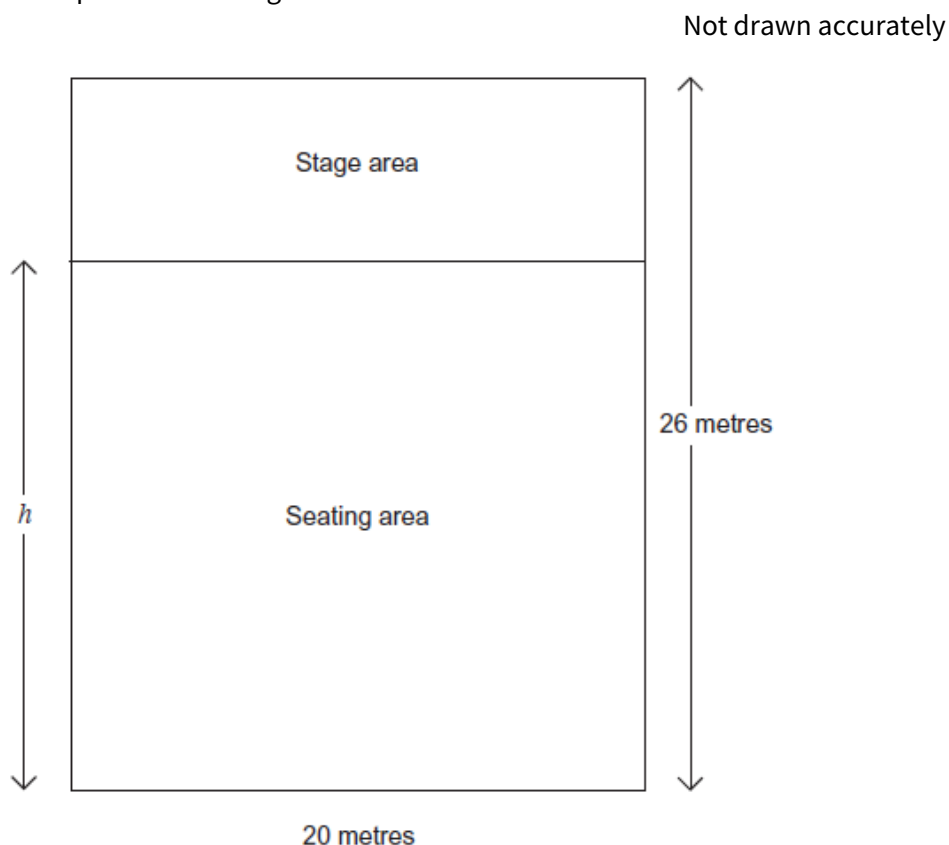
You are given 2.2 pounds = 1 kilogram
 1 kilogram = 1000 grams

Matthew's grandmother asked him to buy $\frac{1}{2}$ pound of cherries.
Cherries are sold in 100 g, 250 g and 500 g packs.
Which pack should he buy to get the nearest amount?
You **must** show your working.

(Total 4 marks)

Q12.

The diagram shows a plan of a rectangular school hall.



- (a) The stage area is one-quarter of the area of the school hall.

Work out the length h

(3)

- (b) In the seating area

the maximum number of rows allowed is 13

the maximum number of seats allowed in a row is 16.

There are the same number of seats in each row.

Altogether there are 168 seats.

Work out the number of rows and the number of seats in each row.

You **must** show your working.

(3)

(Total 6 marks)

Question 13 is **higher** tier only

Q13.

To 3 decimal places, $\pi = 3.142$

An approximation for the value of π^2 is

$$12 \left(\frac{1}{1^2} - \frac{1}{2^2} + \frac{1}{3^2} - \frac{1}{4^2} + \frac{1}{5^2} \right)$$

Does this approximation of π^2 give a value of π within 1% of 3.142?

You **must** show your working.

(Total 5 marks)