




Countdown to your final Maths exam ...

Higher Tier only ... Part 4 (2020)

Bounds

	Marks	Actual	  
Q1. Upper bounds	3		
Q2. Lower bounds	3		
Q3. Upper and lower bounds	4		
Q4. Upper and lower bounds	5		
Q5. Lower bounds	4		
Q6. Upper bounds of area	3		
Q7. Surds	4		

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NON-CALCULATOR

Questions

Q1. Dionne has 60 golf balls.
Each of these golf balls weighs 42 grams to the nearest gram.
Work out the greatest possible total weight of all 60 golf balls.
Give your answer in kilograms.

(3)

Q2. $I = \frac{V}{R}$

$V = 250$ correct to the nearest 5

$R = 3900$ correct to the nearest 100

Work out the lower bound for the value of I .
Give your answer correct to 3 decimal places. You must show your working.

(3)

Q3. Dan does an experiment to find the value of π .
He measures the circumference and the diameter of a circle.

He measures the circumference, C , as 170 mm to the nearest millimetre.
He measures the diameter, d , as 54 mm to the nearest millimetre.

Dan uses $\pi = \frac{C}{d}$ to find the value of π .

Calculate the upper bound and the lower bound for Dan's value of π .

(4)

Q4. $m = \frac{\sqrt{s}}{t}$ $s = 3.47$ correct to 2 decimal places $t = 8.132$ correct to 3 decimal places

By considering bounds, work out the value of m to a suitable degree of accuracy.

You must show all your working and give a reason for your final answer.

(5)

Q5. Sasha drops a ball from a height of d metres onto the ground.

The time, t seconds, that the ball takes to reach the ground is given by $t = \sqrt{\frac{2d}{g}}$

where g m/s² is the acceleration due to gravity.

$d = 35.6$ correct to 3 significant figures.

$g = 9.8$ correct to 2 significant figures.

(a) Write down the lower bound of d .

(1)

(b) Calculate the lower bound of t . You must show all your working.

(3)

Q6. Jerry wants to cover a triangular field, ABC , with fertiliser.

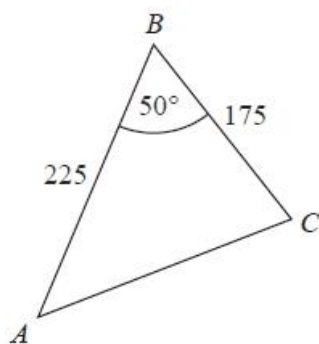


Diagram **NOT**
accurately drawn

Here are the measurements Jerry makes

angle $ABC = 50^\circ$ correct to the nearest degree,

$BA = 225$ m correct to the nearest 5 m,

$BC = 175$ m correct to the nearest 5 m.

Work out the upper bound for the area of the field.

You must show your working.

(3)