Topic test | Real numbers

Real numbers - Applications test

Name: _____ Date: _____

16 questions | 43 marks | 60 minutes

Use roots, pi, bounds and rounding to make practical decisions.

A scientific calculator may be used.

1. A square sign has area $144\ \text{cm}^2$. Find its side. [2 marks]

2. A square mosaic has area $30\ \text{cm}^2$. Is its exact side rational or irrational? [2 marks]

3. A gauge records $1.875\ \text{L}$. Write this as a simplified fraction of a litre. [2 marks]

4. Two square mats have areas $45\ \text{cm}^2$ and $49\ \text{cm}^2$. Which has the longer side? Explain without a calculator. [2 marks]

5. A square plot has area $380\ \text{m}^2$. Show its side is between 19 and 20 metres. [2 marks]

6. Find the side of a square plot with area $380\ \text{m}^2$ to one decimal place. [2 marks]

7. A square mat has area $63\ \text{cm}^2$. Can it lie flat inside a square opening of side $8\ \text{cm}$? Explain. [3 marks]

8. A circular pond has radius $2.5\ \text{m}$. Give its exact circumference. [2 marks]

9. Edging for the radius-$2.5\ \text{m}$ pond is sold in whole metres. Find the least length to buy. [3 marks]

10. Show with squared rounding boundaries that $\sqrt{48}$ rounds to 6.9 to one decimal place. [3 marks]

11. A display rounds a positive length to $4.2\ \text{m}$ to one decimal place. State the interval of possible unrounded lengths. [3 marks]

12. A square has exact area $18\ \text{m}^2$. Does its side round to $4.2\ \text{m}$ to one decimal place? Explain. [3 marks]

13. A route formula is $L=\sqrt{p^2+q^2}$. For $p=15\ \text{km}$ and $q=8\ \text{km}$ calculate L and check by squaring. [3 marks]

14. A square garden has area $80\ \text{m}^2$. Edging costs 6.50 dollars per metre and is sold in any length. Find the total cost to the nearest cent. [4 marks]

15. A student enters $60 \div 2 \times \pi$ for $r = \frac{60}{2\pi}$. [3 marks]

(a) Explain the bracket error. [2 marks]

(b) Give the correct radius to two decimal places. [1 mark]

16. A square has area $17\ \text{m}^2$. A builder rounds the side to $4.1\ \text{m}$ before finding the perimeter. How much smaller is this estimate than the exact perimeter, to two decimal places? [4 marks]