Exact and approximate values

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. Write $\sqrt{32}$ in simplest exact form. [2 marks]

$32 = 16 \times 2$.

Answer: $4\sqrt{2}$

2. Round $\sqrt{7}$ to 3 decimal places. [2 marks]

$\sqrt{7} = 2.645751\ldots$.

Answer: 2.646

3. Find exactly $(3\sqrt{5})^2$. [2 marks]

$9 \times 5 = 45$.

Answer: 45

4. Compare $\pi \times 10$ using exact π with using 3.14. Give the two decimals to 3 places. [3 marks]

$10\pi = 31.415926\ldots$; $10(3.14) = 31.4$.

Answer: 31.416 and 31.400

5. A square has diagonal 10 cm. Find its side exactly and to 2 decimal places. [3 marks]

$s^2 + s^2 = 100$, so $s = \sqrt{50} = 5\sqrt{2}$.

Answer: $5\sqrt{2}$ cm ≈ 7.07 cm

6. Is 0.333 exactly equal to $1/3$? Explain. [2 marks]

$1/3 = 0.3333\ldots$ continues forever; 0.333 is a finite approximation.

Answer: No.