Marking Scheme

PaperSetter Sample School

Mathematics: Squares & Square Roots, Linear Equations, Linear Inequalities…

GRADE 7 — 2026

Q1.

A square root asks which number multiplied by itself gives the number. $18 \times 18 = 324$ and $12 \times 12 = 144$. (1)

So $\sqrt{324} - \sqrt{144} = 18 - 12 = 6$. (1)

Final answer: 6.

Q2.

C. $\frac{4}{3}$ — rearrange into $y = mx + c$, where m is the gradient: $3y = 4x - 7$, so $y = \frac{4}{3}x - \frac{7}{3}$. The option $\frac{3}{4}$ turns the fraction upside down, and reading a coefficient straight off the unrearranged equation gives 4 or 3.

Q3.

This is two inequalities in one, so treat the whole chain together. Subtract 1 from all three parts: $-4 \leq 2x < 8$. (1)

Divide all three parts by 2, a positive number, so both signs stay the same: $-2 \leq x < 4$. (1)

So x is at least -2 and strictly less than 4. (1)

The integers in that range are -2, -1, 0, 1, 2, 3 — note 4 is excluded. (1)

Final answer: $-2 \leq x < 4$; integers $-2, -1, 0, 1, 2, 3$.

Q4.

A. 7 cm — the volume of a cube is side cubed, so the side is $\sqrt[3]{343} = 7$. B is 7^2, the area of one face.

Q5.

D. 1.6 m — the ladder is measured from the wall, so the 30° is at the top and the distance along the ground is the side opposite it. Sine pairs opposite with hypotenuse: $3.2 \times \sin 30^\circ = 3.2 \times 0.5 = 1.6$. The option 3.2 is the ladder itself and 6.4 doubles it instead of halving.

Q6.

The speed is wanted in km/h, so the time must be in hours. 15 minutes is $\frac{15}{60} = \frac{1}{4}$ hour, so the time is $2\frac{1}{4} = \frac{9}{4}$ hours. (1)

$\text{speed} = \frac{\text{distance}}{\text{time}} = 180 \div \frac{9}{4}$. (1)

Dividing by a fraction means multiplying by its reciprocal: $180 \times \frac{4}{9} = 80$. (1)

Final answer: 80 km/h.

Q7.

A. $160, 240, 320$ — the ratio gives $2 + 3 + 4 = 9$ parts, so one part is $720 \div 9 = 80$. The shares are 2, 3 and 4 lots of 80. D splits it equally, ignoring the ratio.

Q8.

Sum of 5 numbers = 5 × 12 = 60

Sum of 4 known = 8 + 15 + 10 + 14 = 47

Fifth number = 60 − 47 = 13

Q9.

The area of a square is side $\times$ side, so the side is the square root of the area. (1)

$\sqrt{1296} = 36$, since $36 \times 36 = 1296$. (1)

Final answer: 36 m.

Q10.

Multiply both sides by 2 to clear the fraction. Multiplying by a positive number keeps the inequality sign the same: $x + 3 > 10$. (1)

Subtract 3 from both sides: $x > 7$. (1)

Final answer: $x > 7$.

Q11.

A. 1.6 m — the ladder is measured from the wall, so the 30° is at the top and the distance along the ground is the side opposite it. Sine pairs opposite with hypotenuse:
$3.2 \times \sin 30^\circ = 3.2 \times 0.5 = 1.6$. The option 3.2 is the ladder itself and 6.4 doubles it instead of halving.

Q12.

The ratio $2 : 3 : 5$ gives $2 + 3 + 5 = 10$ parts in total, so each worker takes that fraction of the profit. (1)

First worker: $\frac{2}{10} \times 150{,}000 = 30{,}000$. (1)

Second worker: $\frac{3}{10} \times 150{,}000 = 45{,}000$. (1)

Third worker: $\frac{5}{10} \times 150{,}000 = 75{,}000$. Check: $30{,}000 + 45{,}000 + 75{,}000 = 150{,}000$. (1)

Final answer: Ksh $30{,}000$, Ksh $45{,}000$ and Ksh $75{,}000$.

Q13.

A. 13 — the five numbers must total $12 \times 5 = 60$. The four known ones add to 47, so the fifth is $60 - 47 = 13$.

Q14.

Write the decimal as a fraction so both parts are perfect squares: $0.0049 = \frac{49}{10000}$. (1)

The square root of a fraction is the square root of the top over the square root of the bottom:
$\frac{\sqrt{49}}{\sqrt{10000}} = \frac{7}{100}$. (1)

$\frac{7}{100} = 0.07$. (1)

Final answer: 0.07. Check: $0.07 \times 0.07 = 0.0049$.

Q15.

The ratio $5:3$ gives $5 + 3 = 8$ parts altogether, so boys are $\frac{5}{8}$ of the class. (1)

$\frac{5}{8} \times 120 = 75$. (1)

Final answer: 75 boys. Check: girls $= \frac{3}{8} \times 120 = 45$, and $75 + 45 = 120$.

Q16.

A. 4 — the mode is the most frequent value: 4 appears three times while 7 and 2 appear twice each.