Marking Scheme

PaperSetter Sample School

Grade 9 Mathematics

GRADE 9 — 2026

Q1.

D. $1\frac{1}{4}$ — the lowest common denominator of 3, 4 and 6 is 12: $\frac{8}{12} + \frac{9}{12} - \frac{2}{12} = \frac{15}{12} = \frac{5}{4}$. A is the same value as an improper fraction, but the mixed number is the required form.

Q2.

A. 12 — subtract 5 to get $\frac{x}{3} = 4$, then multiply both sides by 3. C stops at 4 without undoing the division.

Q3.

A. 4 — 'NOT satisfy' reverses the usual task. Solving gives $x < 4$, so 4 is the one value excluded; 3, 2 and 0 all work.

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.

A. 2 hrs 30 min — time is distance divided by speed: $150 \div 60 = 2.5$ h, and half an hour is 30 min, not 50.

Q6.

A. 540° — a pentagon splits into $5 - 2 = 3$ triangles, so $3 \times 180 = 540$. B is a quadrilateral's total, C a hexagon's and D a single triangle's.

Q7.

A. Shortest distance — any other line from the point to the line is the hypotenuse of a right-angled triangle whose shorter leg is the perpendicular, so it must be longer.

Q8.

A. -9 — a positive divided by a negative is negative, and $36 \div 4 = 9$. B drops the sign.

Q9.

A. 6 — $6 \times 6 \times 6 = 216$. The next cubes up are 343 and 512, so none of the other options works.

Q10.

A. 420 km — direct proportion. The speed is $240 \div 4 = 60$ km/h, so seven hours cover $60 \times 7 = 420$ km.

Q11.

A. 4 — subtract 5 from both sides to get $2x = 8$, then divide by 2. D stops at 8 without dividing.

Q12.

A. $x < -4$ — divide both sides by -2. Dividing by a negative reverses the inequality and gives a negative answer, so $x < -4$. C loses the minus sign and B keeps the original direction.

Q13.

A. 5 — $\sqrt{(4-1)^2 + (6-2)^2} = \sqrt{9+16} = \sqrt{25} = 5$. B is $3 + 4$, the distance along the axes rather than directly.

Q14.

A. $2 : 5$ — areas scale by the square of the side ratio, so take the square root to go back: $\sqrt{\frac{16}{100}} = \frac{4}{10} = \frac{2}{5}$. C gives the area ratio itself, which is the trap.

Q15.

A. 13 — the median is the middle value once the data is in order: $11, 12, 13, 15, 17$. The middle of the unordered list would give 11, which is why ordering comes first.

Q16.

D. $\frac{1}{3}$ — the bag holds $5 + 3 + 4 = 12$ beads, so $P(\text{green}) = \frac{4}{12} = \frac{1}{3}$. A uses 1 over the total instead of the number of green beads.

Q17.

A. -200 m — rising adds and descending subtracts: $-250 + 90 = -160$, then $-160 - 40 = -200$. B subtracts the rise as well.

Q18.

A. 17.75 — write 25.60 so both have two decimal places, then subtract with regrouping: $60 - 85$ hundredths needs a borrow from the whole numbers.

Q19.

C. $\frac{1}{4}$ — the root of a fraction is the root of each part: $\frac{\sqrt{1}}{\sqrt{16}} = \frac{1}{4}$. A halves the denominator rather than rooting it.

Q20.

B. 11 — collect the x terms on the side where they stay positive: $7 + 4 = 3x - 2x$, so $x = 11$.

Q21.

D. 14 cm — work backwards from $C = 2\pi r$: $2 \times \frac{22}{7} \times r = 88$, so $44r \div 7 = 88$ and $r = \frac{88 \times 7}{44} = 14$. A is the diameter, not the radius.

Q22.

B. 60 degrees — 'equilateral' means all three angles are equal, and they total $180°$: $180 \div 3 = 60$. A would make the three angles total $270°$.

Q23.

A. Third quadrant — both coordinates are negative. The quadrants are numbered anticlockwise from the top right, so the pair of signs fixes the quadrant: $(+, +)$ first, $(-, +)$ second, $(-, -)$ third, $(+, -)$ fourth.

Q24.

B. 2 m — a scale of $1 : 200$ means 1 cm stands for 200 cm, and 100 cm make a metre, so that is 2 m. C reads the 200 as metres directly.

Q25.

A. 1540 cm^3 — volume is the circular cross-section times the height: $\pi r^2 h = \frac{22}{7} \times 49 \times 10$. B stops at the area of the circle without multiplying by the height.

Q26.

A. $360°$ — walking once round any polygon turns you through one full revolution, so the exterior angles always total $360°$ no matter how many sides it has. C is a pentagon's interior total.

Q27.

B. 17 — a cube root asks which number multiplied by itself three times gives 4913. Since $17 \times 17 \times 17 = 4913$, the answer is 17. The cube of 13 is only 2197.

Q28.

A. $-1, 0, 1, 2, 3, 4$ — both signs are $\leq$, so both endpoints are included. C drops the 4 and D drops the -1.

Q29.

D. 3.05 — significant figures are counted from the first non-zero digit, so the first three here are 3, 0 and 4. The next digit is 9, so the 4 rounds up to 5. A truncates instead of rounding.

Q30.

C. 3 cm — a ratio scale has no units, so convert first: 15 m is $1{,}500$ cm, and $1{,}500 \div 500 = 3$. A divides the metres by 500 without converting.

Q31.

The radius is half the diameter: $r = \frac{1.4}{2} = 0.7$ m. (1)

The volume of a cylinder is $\pi r^2 h$, so $V = \frac{22}{7} \times 0.7^2 \times 2$. (1)

$0.7^2 = 0.49$, and $\frac{22}{7} \times 0.49 = 1.54$, so $V = 1.54 \times 2 = 3.08$ m^3. (1)

Capacity in litres: $3.08 \times 1{,}000 = 3{,}080$. (1)

Final answer: $3{,}080$ litres.

Q32.

Football: 120/300 × 360 = 144°

Netball: 80/300 × 360 = 96°

Athletics: 40/300 × 360 = 48°

Swimming: 60/300 × 360 = 72°.

Q33.

The mean is the total divided by how many values there are. Adding the ten marks:
$45 + 67 + 52 + 78 + 60 + 72 + 55 + 83 + 48 + 70 = 630$. (1)

Mean $= \frac{630}{10} = 63$. (1)

The median is the middle value, so first put the marks in order:
$45, 48, 52, 55, 60, 67, 70, 72, 78, 83$. (1)

With an even count of 10 there is no single middle, so average the 5th and 6th: $\frac{60+67}{2} = 63.5$. (1)

Final answer: mean 63, median 63.5.

Q34.

A + B = $\begin{bmatrix} 3 & 2 \\ 4 & 7 \end{bmatrix}$

A − B = $\begin{bmatrix} -1 & 2 \\ 2 & 1 \end{bmatrix}$

Q35.

Angle $P = 90^\circ$, so QR is the hypotenuse, and PR is opposite angle Q. That pairing calls for the sine ratio: $\sin Q = \frac{\text{opposite}}{\text{hypotenuse}}$. (1)

$\sin 30^\circ = \frac{5}{QR}$, and $\sin 30^\circ = 0.5$, so $0.5 \times QR = 5$ and $QR = 10$ cm. (1)

Now PQ is the third side of a right-angled triangle, so use Pythagoras: $PQ = \sqrt{10^2 - 5^2}$. (1)

$100 - 25 = 75$, and $\sqrt{75} = 5\sqrt{3} \approx 8.66$. (1)

Final answer: $QR = 10$ cm and $PQ = 5\sqrt{3} \approx 8.66$ cm.