

GRADE 7

15-Second Questions

1. What is  $4(6 - 8) - (10 + 3)$ ? [ -21 ]
2. Solve for  $x$  if  $\frac{1}{x} + \frac{2}{y} = 1$ . Simplify your answer. [  $y/(y - 2)$  ]
3. Simplify  $\frac{b \times b^3}{b + b + b}$ . [  $\frac{1}{3}b^3$  ]
4. Change the decimal 0.36 to a fraction in lowest terms. [ 9/25 ]
5. Translate the expression "four-fifths of a number  $b$  less than the product of  $a$  and  $c$ ." [  $ac - \frac{4}{5}b$  ]
6. How many liters is equal to  $540 \text{ dm}^3$ ? [ 540 ]
7. What is the largest integer less than  $-\sqrt{200}$ ? [ -15 ]
8. Expand  $(q^2 - r + 2)(q^2 - r - 2)$ . [  $q^4 - 2q^2r + r^2 - 4$  ]
9. If  $A$  has 30 elements,  $B$  has 15, and  $A \cup B$  has 38, how many elements does  $A \cap B$  have? [ 7 ]
10. Find the length of a rectangle whose perimeter is 84 m, and whose length is 12 m longer than its width. [ 27 m ]
11. Write  $62 \times 10^{-4}$  in decimal notation. [ 0.0062 ]

30-Second Questions

1. Solve for  $x$ :  $3x - 14 - \frac{1}{3}x = x + \frac{1}{6} - 5$  [ 11/2 ]
2. The volume of a right circular cone is  $240\pi \text{ cm}^3$ . If its height is 6 cm, find its radius. [  $2\sqrt{30} \text{ cm}$  ]
3. The mean of a set of 3 numbers is 100. If 85 is removed from the set, what is the new mean? [ 107.5 ]
4. Solve the equation  $5 - |11 + 3x| = 0$ . [ -2, -16/3 ]
5. The area of a circular garden is increased by 44%. By what percent is the radius of the garden increased? [ 20% ]
6. What number is halfway between  $4 - \frac{1}{2}$  and  $2 + \frac{2}{5}$ ? [ 59/20 ]

1-Minute Questions

1. An isosceles triangle with perimeter 72 cm is cut in half through a line passing through its vertex angle. If each resulting triangle has a perimeter of 60 cm, find the height of the original triangle. [ 24 cm ]
2. Gina and Aimee regularly run around an 800-meter track, but Gina runs 2 m/s faster. If they start from the same point on this track, and run in the same direction, Gina will eventually pass Aimee in 6 minutes and 40 seconds. What is Aimee's speed? [ 4 m/s ]
3. Convert 8.1454545... to a fraction. [ 448/55 ]
4. Find the median of the following data values: 25, 18, 16, 15, 20, 20, 21, 19, 30, 18 [ 19.5 ]
5. Two exterior angles of a pentagon are  $62^\circ$  and  $46^\circ$ . Find the largest of the remaining three exterior angles if they are in the ratio 3 : 5 : 6. [  $108^\circ$  ]
6. In parallelogram  $ABCD$ ,  $AB = 3x + 6$ ,  $BC = 2x + 5$ , and  $CD = 5x - 22$ . Find its perimeter. [ 162 ]

Clincher

1. The exterior angle adjacent to the vertex angle of a triangle is  $130^\circ$ . What is the measure of the base angle? [  $65^\circ$  ]
2. Solve the inequality  $\frac{2 - x}{15} - \frac{x - 2}{20} \leq 0$ . Express the solution in interval notation. [  $[2, \infty)$  ]
3. In a group of 200 students, 45 are swimmers, 36 are runners, and 62 are cyclists. There are also 18 who swim and run, 22 who run and cycle, and 13 who swim and cycle, and 6 who do all three. How many students do at most one of the three given activities? [ 159 ]

Do-or-Die Question

1. The temperature of a drink in a refrigerator decreased from  $60^\circ\text{F}$  to  $45^\circ\text{F}$  in 1 hour. By how many  $^\circ\text{C}$  did the temperature decrease? [  $25/3$  or  $8.\bar{3}$  ]