



CREST Mathematics Olympiad (CMO) Worksheet *for* Class 6



Topic
Algebra



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Worksheet on Algebra

1. If $m = 12$, evaluate the following algebraic expression:

$$\frac{m^2}{2} - \frac{m}{3} - 7$$

- a. 51
- b. 61
- c. 71
- d. 91

2. What is the value of the given algebraic expression if $a = 7$ and $b = -2$?

$$\frac{a^2}{7} + 3b - 15$$

- a. -21
- b. -14
- c. -7
- d. 2

3. The salary \$ S of Dmitri Mendeleev earning \$ p per hour for t hours is given by the formula $S = pt - 3$. What is his salary for working 20 hours at a rate of \$47.95 per hour?

- a. \$953
- b. \$956
- c. \$959
- d. \$1059

4. The number of shops on the ground floor of a building is 5 less than twice the number of shops on the first floor. The ground floor has x shops and the first floor has y shops. How many shops does the ground floor have if the first floor has 14 shops?

- a. $x = 21$
- b. $x = 23$
- c. $y = 21$
- d. $y = 23$

5. At a marriage party, the chairs are arranged in r^2 rows and each row contains $3ar$ chairs. What is the total number of chairs in the party?

- a. $3r^3$
- b. $r^3/3$
- c. $3ar^3$
- d. $ar^3/3$

Answer Key

1. b - 61

Explanation: If $m = 12$, the value of the algebraic expression is:

$$\begin{aligned} & \frac{m^2}{2} - \frac{m}{3} - 7 \\ &= \frac{12^2}{2} - \frac{12}{3} - 7 \\ &= \frac{12 \times 12}{2} - \frac{12}{3} - 7 \\ &= 72 - 4 - 7 \\ &= 61 \end{aligned}$$

2. b - -14

Explanation: If $a = 7$ and $b = 2$, the value of the algebraic expression is:

$$\begin{aligned} & \frac{a^2}{7} + 3b - 15 \\ &= \frac{7^2}{7} + 3 \times (-2) - 15 \\ &= \frac{7 \times 7}{7} - 6 - 15 \\ &= 7 - 21 \\ &= -14 \end{aligned}$$

3. b - \$956

Explanation: $t = 20$ hours

$$p = \$47.95$$

$$S = pt - 3$$

$$= (p \times t) - 3$$

$$= (\$47.95 \times 20) - 3$$

$$= \$959 - 3$$

$$= \$956$$

4. b - $x = 23$

Explanation: Number of shops on the ground floor = x

Number of shops on the first floor = y

The number of shops on the ground floor of a building is 5 less than twice the number of shops on the first floor.

$$\text{Number of shops on the ground floor} = (2 \times \text{Number of shops on the first floor}) - 5$$

$$\Rightarrow x = (2 \times y) - 5$$

$$\Rightarrow x = (2 \times 14) - 5$$

$$\Rightarrow x = 28 - 5$$

$$\Rightarrow x = 23$$

5. $c - 3ar^3$

Explanation: Number of rows = r^2

Number of chairs in each row = $3ar$

Total number of chairs in the party = Number of rows \times Number of chairs in each row
 $= r^2 \times 3ar$
 $= 3ar^3$

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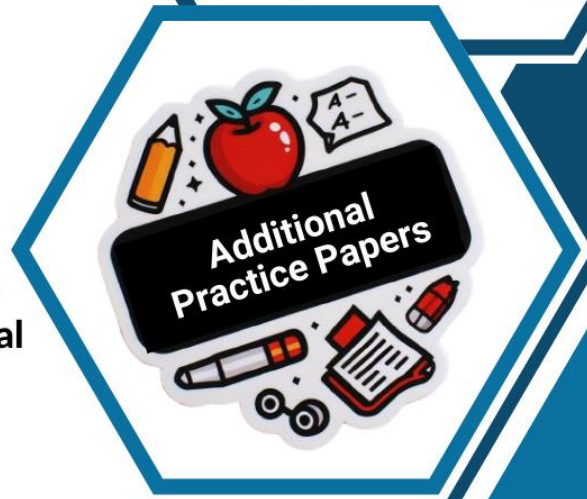
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