



# CREST Mathematics Olympiad (CMO) Worksheet *for*

**Class 7**



**Topic**

**Comparing Quantities**



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## Worksheet on Comparing Quantities

1. An article is marked 40% above the cost price and sold at a 15% discount. What is the profit percent made?
  - a. 15%
  - b. 17%
  - c. 19%
  - d. 21%
2. The cost price of 10 pencils is the same as the selling price of 8 pencils. What is the profit or loss per cent made if all the pencils bought are considered to be sold?
  - a. 20% Profit
  - b. 25% Profit
  - c. 25% Loss
  - d. 25% No Profit No Loss
3. An old car is bought for \$12000 and \$100 is spent on its transportation. What is the selling price of it in order to gain 5% on the whole?
  - a. \$12705
  - b. \$12750
  - c. \$13705
  - d. \$13750
4. Antony and Brutus invest \$36000 and \$25000, respectively at the same rate of interest per annum. If at the end of 4 years, Antony gets \$2860 more interest than Brutus, what is the rate of interest per annum?
  - a. 4.5%
  - b. 5.5%
  - c. 6.5%
  - d. 7.5%
5. If  $7.5 : 13 :: Z : 78$ , what will be the value of  $7Z$ ?
  - a. 295
  - b. 315
  - c. 365
  - d. 395

## Answer Key

1. c - 19

**Explanation:** Let the cost price (C.P.) of an article be \$100.  
An article is marked 40% above the cost price.

$$\text{M.P.} = \text{CP} + 40\% \text{ of C.P.}$$

$$= 100 + 40\% \times 100$$

$$100 + \frac{40}{100} \times 100$$

$$= 100 + 40$$

$$= \$140$$

$$\text{Discount \% (d\%)} = 15\%$$

$$= \frac{\text{M.P.} \times (100 - d\%)}{100}$$

$$= \frac{140 \times (100 - 15)}{100}$$

$$= \frac{140 \times 85}{100}$$

$$= \$119$$

$$\text{Profit} = \text{S.P.} - \text{C.P.}$$

$$= \$ (119 - 100)$$

$$= \$19$$

$$\text{Profit\%} = \frac{\text{Profit}}{\text{C.P.}} \times 100 \%$$

$$= \frac{19}{100} \times 100 \%$$

$$= 19\%$$



2. b - 25% Profit

**Explanation:** Let the cost price of 10 pencils be \$100.  
Selling price of 8 pencils = Cost price of 10 pencils = \$100

$$\text{Cost price of 1 pencil} = \$ \frac{100}{10} = \$10$$

$$\text{Selling price of 1 pencil} = \$ \frac{100}{8} = \$12.5$$

If S.P. is greater than C.P., there is always profit.

$$\text{Profit} = \text{S.P.} - \text{C.P.}$$

$$= \$ (12.5 - 10)$$

$$= \$2.5$$

$$\text{Profit\%} = \frac{\text{Profit}}{\text{C.P.}} \times 100 \%$$

$$= \frac{2.5}{10} \times 100 \%$$

$$= 25\%$$



3. a - \$12705

**Explanation:** C.P. of an old car = \$12000  
Amount spent on transportation = \$100  
Total C.P. of a car = \$(12000 + 100) = \$12100  
Profit% = 5%

$$\begin{aligned}
 \text{S.P of a car} &= \frac{\text{C.P.} \times (100 + \text{Profit \%})}{100} \\
 &= \frac{12100 \times (100 + 15)}{100} \\
 &= \frac{12100 \times 105}{100} \\
 &= \$12705
 \end{aligned}$$

4. c - 6.5%

Antony's Investment ( $P_1$ ) = \$36000  
 Brutus's Investment ( $P_2$ ) = \$25000  
 Same Rate of interest = R% p.a  
 Time (T) = 4 years  
 Antony gets \$2860 more interest than Brutus.  
 $SI_1 = SI_2 + \$2860$

$$\frac{P_1 \times R \times T}{100} = \frac{P_2 \times R \times T}{100} + 2860$$

$$\frac{36000 \times R \times 4}{100} = \frac{25000 \times R \times 4}{100} + 2860$$

$$1440R = 1000R + 2860$$

$$1440R - 1000R = 2860$$

$$440R = 2860$$

$$R = \frac{2860}{440}$$

$$R = 6.5\%$$

5. b - 315

**Explanation:** Product of extremes = Product of means

$$\Rightarrow 7.5 \times 78 = 13 \times Z \text{ [If } a : b :: c : d \text{ then } ad = bc]$$

$$\Rightarrow Z = 7.5 \times 78 / 13$$

$$\Rightarrow Z = 45$$

$$\text{Value of } 7Z = 7 \times Z = 7 \times 45 = 315$$

**More Questions Coming Soon – Keep Learning!**

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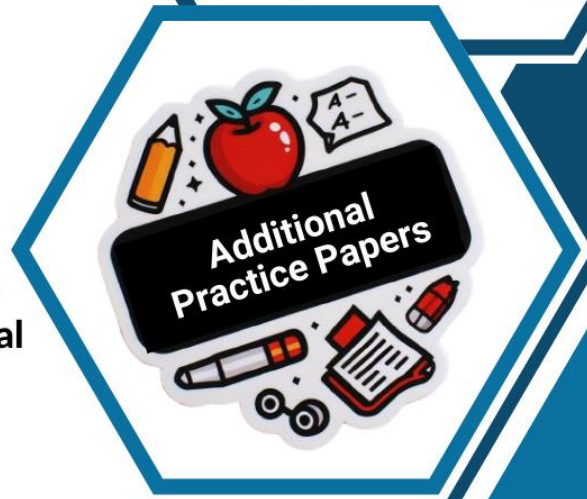
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