

Final Exam Part 1

By

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Period: 2

Concept #18: Geometric Mean (G.M)

- My Understanding of G.M:
 - It reminds me of Average and mean which I learned in middle school
 - It can be compared with Arithmetic mean, but in Geometric mean you multiply and then take the square root of the product unlike Arithmetic mean where you add and divide the sum by how many you added.
 - G.M can be found by setting a proportion.
 - G.M can be graphically represented by constructing the altitude of the hypotenuse of a right triangle.

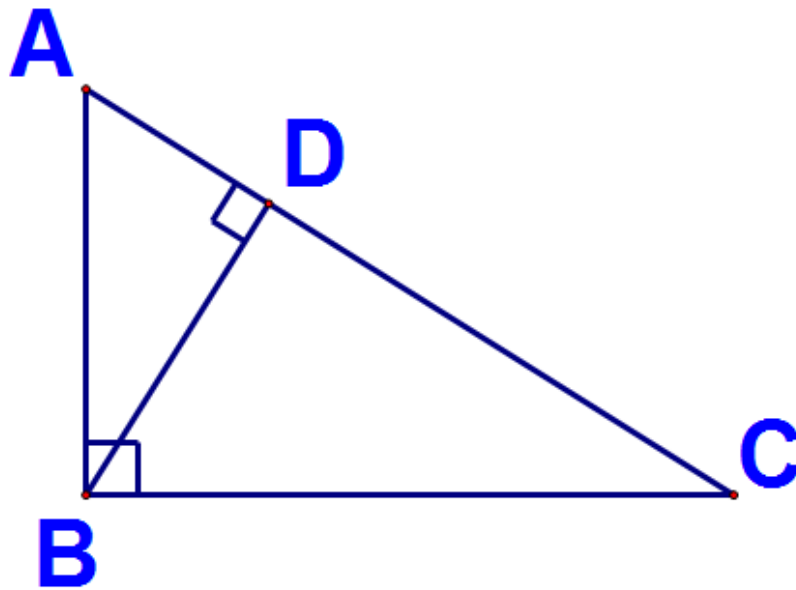
G.M in a Proportion

- $\frac{x}{3} = \frac{6}{x}$
- In this case x represent the G.M of 3 and 6.
- By solving the proportion;

$$x = \sqrt{(6)(3)} = \sqrt{18} = \sqrt{(9)(2)} = 3\sqrt{2}$$

G.M in a Right Triangle

\overline{BD} is the Altitude of hypotenuse \overline{AC}

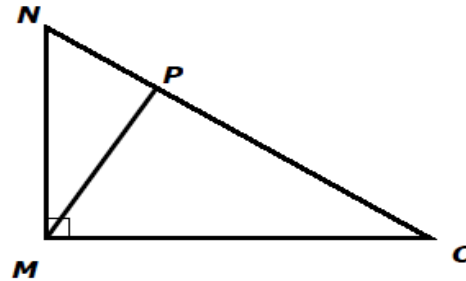


- 1) \overline{AB} is G.M of \overline{AD} and \overline{AC}
- 2) \overline{DB} is G.M of \overline{AD} and \overline{DC}
- 3) \overline{CB} is G.M of \overline{AC} and \overline{DC}

$$\frac{AB}{AD} = \frac{AC}{AB}$$

Problem Scenario

4. Given: $NP = 27$ and $NO = 75$. \overline{MP} is the altitude to the hypotenuse of right triangle MON .



What is the value of MP ?

- F 45
- G 48
- H 24
- J 36

Solution:

$$PO = NO - NP = 75 - 27 = 48$$

Since MP is G.M of NP and PO

$$\frac{MP}{27} = \frac{48}{MP}$$

$$\begin{aligned} MP &= \sqrt{(48)(27)} = \sqrt{(16)(3)(9)(3)} \\ &= \sqrt{(16)(9)(9)} = 4 \times 3 \times 3 = 36 \end{aligned}$$

Concept #5: Special Right Triangle