

Apprenticeship Math 12
NOTES: Order of Operations

Name: Ms. B
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Brackets $() []$ $\frac{(5+2)}{3}$ $\sqrt{(9+7)}$
Exponents *and* $\sqrt{\quad}$ $5^2 = 5 \times 5 = 25$ $3^5 = 3 \times 3 \times 3 \times 3 \times 3$
Division }
Multiplication } \Rightarrow in order from LEFT to RIGHT
Addition }
Subtraction } \Rightarrow in order from LEFT to RIGHT

Evaluate each expression. Show your steps.

$$\begin{aligned} & 40 \div 4 \times 2^3 + 4(9 - 5)^2 \\ & = 40 \div 4 \times \underline{2^3} + 4 \times \underline{(4)^2} \\ & = \underline{40 \div 4} \times 8 + 4 \times 16 \\ & = \underline{10} \times 8 + 4 \times 16 \\ & = 80 + \underline{4 \times 16} \\ & = 80 + 64 \\ & = 144 \end{aligned}$$

$$\begin{aligned} & 3(\underline{9 - 4 + 2}) + (\underline{4^3} \div 8) \\ & = 3(\underline{5 + 2}) + (\underline{64} \div 8) \\ & = \underline{3 \times 7} + 8 \\ & = 21 + 8 \\ & = 29 \end{aligned}$$

$$\begin{aligned} & 0.7 + 2.2(\underline{4.58 - 3.12}) + \underline{\sqrt{12.5 - 3.5}} \\ & = 0.7 + 2.2(1.46) + \underline{\sqrt{9}} \\ & = 0.7 + \underline{2.2 \times 1.46} + 3 \\ & = 0.7 + 3.212 + 3 \\ & = 6.912 \end{aligned}$$

$$\begin{aligned} & 15 \div 2.5 + \underline{\sqrt{6.25}} - \underline{3^2} \\ & = \underline{15 \div 2.5} + 2.5 - 9 \\ & = \underline{6 + 2.5} - 9 \\ & = 8.5 - 9 \\ & = -0.5 \end{aligned}$$