

M8 - 4.2 - Percentage Notes

$$\frac{IS}{OF} = \frac{\%}{100}$$

$$\frac{\square}{\square} = \frac{\square}{\square}$$

Calculator!
Fractions
Cross Multiply
Long Division

What is eight out of twenty as a percentage?

$$\% = 40\%$$

1

$$\frac{IS}{OF} = \frac{\%}{100}$$

$$\frac{\square}{\square} = \frac{\square}{\square}$$

$$\frac{8}{20} = \frac{\%}{100}$$

$$\frac{8}{20} = \frac{40}{100}$$

$$\frac{8}{20} = 0.4 \text{ Calc!}$$

Total

Test on Calculator!

$$0.1 = \frac{1}{10}$$

$$0.23 = \frac{23}{100}$$

$$0.045 = \frac{45}{1000}$$

$$0.\bar{3} = \frac{3}{9}$$

$$0.4\bar{5} = \frac{45}{99}$$

Find 15% of 200.

$$x = 30$$

$$\frac{x}{200} = \frac{15}{100}$$

Cross Multiply
Divide

$$\frac{x}{200} = \frac{15}{100}$$

$$100x = 3000$$

$$x = 30$$

$$\frac{30}{200} = 0.15 \text{ Check!}$$

× 100 → Move decimal 2 places to the right.

$$0.0073 = 0.73\%$$

$$0.05 = 5\%$$

$$0.1 = 10\%$$

$$0.12 = 12\%$$

$$0.\bar{3} = 33.\bar{3}\%$$

$$0.5 = 50\%$$

$$0.\bar{66} = 66.67\%$$

$$1.05 = 105\%$$

$$1.35 = 135\%$$

$$2.12 = 212\%$$

← ÷ 100 Move decimal 2 places to the left.

25 is 20% of what?

$$x = 125$$

$$\frac{25}{x} = \frac{20}{100}$$

$$\frac{25}{20} = 1.25$$

Less than 5 Round Down

$$5.7\textcircled{4} = 5.7$$

$$5.7\textcircled{6} = 5.8$$

5 or More Round Up

Round To Tenths

Increase 200 by 15%

$$15\% = 0.15$$

Logic!

$$200 \times 0.15 = 30$$

Multiply by the decimal

2

$$200 + 30 = 230$$

Then Add (Or Subtract*)

OR

$$200 \times 1.15 = 230$$

Multiply by the % you want to be!

2a

Check!

$$M = 1 + 0.15$$

$$M = 1.15$$

$$\text{Multiplier} = 1 \pm r$$

$$M = 1 \pm r$$

$$\text{Initial} \times \text{Multiplier} = \text{Final}$$

$$\frac{230}{200} = 1.15$$

Decrease 200 by 15%

$$200 \times 0.15 = 30$$

OR 2a

$$M = 1 - 0.15$$

$$M = 0.85$$

$$200 - 30 = 170$$

$$200 \times 0.85 = 170$$

Find the Percent Change increase from 10 to 12.

$$\% \text{Change} = \frac{\text{Final} - \text{Initial}}{\text{Initial}}$$

$$\% \text{Change} = \frac{12 - 10}{10} = \frac{2}{10} = 0.2 = 20\%$$

3

Find a number decreased by 20% to be 160

$$x = 200 \rightarrow \frac{160}{x} = \frac{80}{100}$$

$$x \times 0.80 = 160$$

$$0.80x = 160$$

$$\frac{0.80x}{0.80} = \frac{160}{0.80}$$

$$x = 200$$

$$M = 100 - 20 = 80\% = 0.80$$

Jack ate 4 more, 40% more than Jill.

5

$$\frac{j + 4}{j} = \frac{140}{100}$$

$$100(j + 4) = 140j$$

$$100j + 400 = 140j$$

$$400 = 40j$$

$$j = 10$$

Cross Multiply
Distribute
Algebra

let j = #jill ate

$$M = 100 + 40 = 140\%$$

$$\text{Jack ate } 14! \quad 10 + 4 = 14$$