



Warm Up Grade 8

March 3, 2017

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1) Jim and Karen are competing for first place in their grade 8 class. Karen receives 23.5 out of 25 on her math test and Jim receives 29.5 out of 32/ Who received the higher mark?

$$K \frac{23.5}{25} = 0.94 = 94\%$$

$$J \frac{29.5}{32} = 0.921875 = 92\%$$

Karen made
the
higher
mark

2) The cost to make a pen is \$0.15. The company sells the pen for 450% of its cost to make. How much profit do they make off of 1 pen?

450% of Cost = Selling

↓ change to decimal

$$4.50 \times \$0.15 = 0.675$$

$$\approx 0.68$$

$$\text{Profit} = \text{Sell} - \text{Cost}$$

$$= 0.68 - 0.15$$

$$= \$0.53$$

You make a profit of \$0.53



3) 26% of a number is 93.6, what is that number?

$$26\% \text{ of } n = 93.6$$

↓ change % to decimal

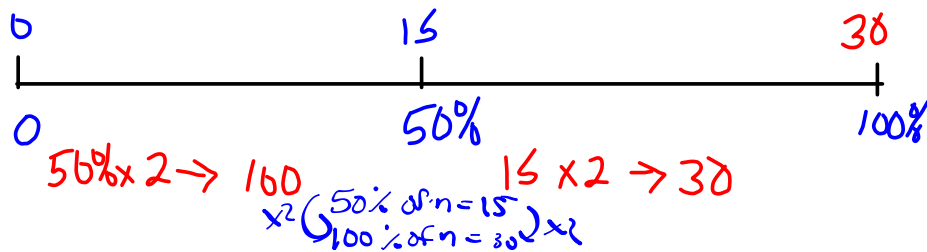
$$\frac{0.26 \times n}{0.26} = \frac{93.6}{0.26}$$

← solve for n
by ÷ by
decimal
on both
sides

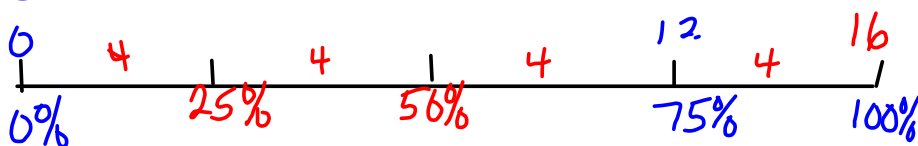
$$n = 360$$

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3a) 50% of a number is 15

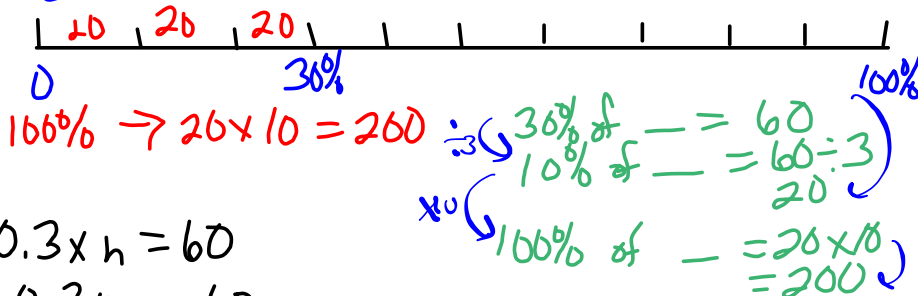


b) 75% of a number is 12



$75\% \text{ of } _ \text{ is } 12$
 $25\% \text{ of } _ \text{ is } 12 \div 3 = 4$
 $100\% \text{ of } _ \text{ is } 4 \times 4 \rightarrow 16$

c) 30% of a number is 60

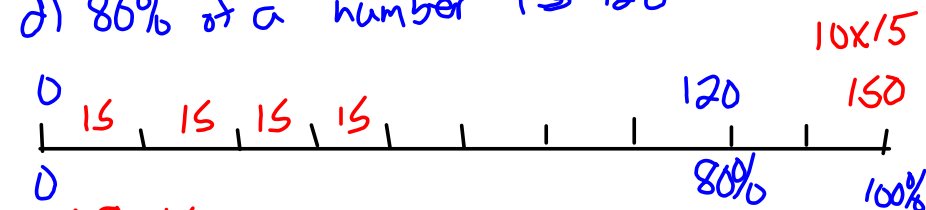


$$0.3 \times n = 60$$

$$\frac{0.3n}{0.3} = \frac{60}{0.3}$$

$$n = 200$$

d) 80% of a number is 120



$$120 \div 8 = 15$$

$$0.8 \times n = 120$$

$$\frac{0.8n}{0.8} = \frac{120}{0.8}$$

$$n = 150$$

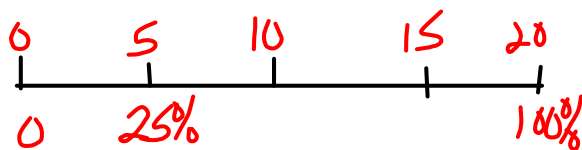
$\div 8 \left(\begin{array}{l} 80\% \text{ of } n = 120 \\ 10\% \text{ of } n = 120 \div 8 \\ = 15 \\ 100\% \text{ of } n = 15 \times 10 \\ = 150 \end{array} \right)$

4a) 25% of a number is 5

$$\frac{0.25n = 5}{0.25} \quad \frac{0.25}{0.25}$$

$$n = 20$$

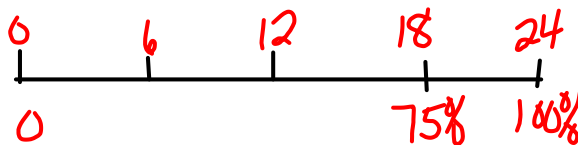
$$\begin{array}{l} 25\% \text{ of } _ = 5 \\ \uparrow \quad \quad \quad \times 4 \\ 100\% \text{ of } _ = 20 \end{array}$$



b) 75% of a number is 18

$$\begin{array}{l} 75\% \text{ of } _ = 18 \\ 25\% \text{ of } _ = 18 \div 3 \\ \quad \quad \quad = 6 \\ 100\% \text{ of } _ = 6 \times 4 \\ \quad \quad \quad = 24 \end{array}$$

$$\begin{array}{l} 0.75 \times h = 18 \\ \frac{0.75h}{0.75} = \frac{18}{0.75} \\ \quad \quad \quad = 24 \end{array}$$

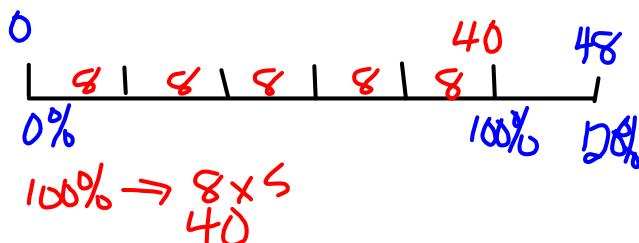


c) 4% of a number is 32

$$\begin{array}{l} 0.04 \times h = 32 \\ \frac{0.04h}{0.04} = \frac{32}{0.04} \\ \quad \quad \quad h = 800 \end{array}$$

$$\begin{array}{l} 4\% \text{ of } _ = 32 \\ 1\% \text{ of } _ = 32 \div 4 \\ \quad \quad \quad = 8 \\ 100\% \text{ of } _ = 8 \times 100 \\ \quad \quad \quad \quad \quad 800 \end{array}$$

d) 120% of a number is 48



$$\begin{array}{l} 1.2 \times h = 48 \\ \frac{1.2h}{1.2} = \frac{48}{1.2} \\ \quad \quad \quad h = 40 \end{array}$$

7. a) 15% is 125g

$$15\% \text{ of } n = 125$$

$$0.15n = 125$$

$$\frac{0.15n}{0.15} = \frac{125}{0.15}$$

$$n = 833.3$$

b) 9% of — is 45

1% of — is 5

100% of — is $\frac{5 \times 100}{500}$

number is 500

$$0.09n = 45$$

$$\frac{0.09n}{0.09} = \frac{45}{0.09}$$

$$n =$$

c) 0.8% of — is 12

↓

$$0.008n = 12$$

$$\frac{0.008n}{0.008} = \frac{12}{0.008}$$

$$n = 1500$$

10. 2001 \rightarrow 12% less miners

12% of miners in 1986

12% of 193 000

$$0.12 \times 193\,000$$

23 160 \rightarrow fewer miners

So in 2001

$$193\,000 - 23\,160$$

169 840 miners in 2001

12. Jemma

Week 1 15% of 1.5

Increase 0.15×1.5

$$0.225$$

Mass after week 1 $\rightarrow 1.5 + 0.225$
1.725

Week 2 15% of 1.725

Increase 0.15×1.725

$$0.25875$$

Jemma's
Mass - Week 2

$$1.725 + 0.25875$$

$$1.98375 \text{ kg}$$

George

30% increase

in 2 weeks

30% of 1.5

$$= 0.3 \times 1.5$$

$$= 0.45$$

Total mass $1.5 + 0.45$

$$1.95 \text{ kg}$$

Finding the Percent Increase or Percent Decrease

$$\frac{\text{Difference}}{\text{Original}} \times 100$$

$$\left(\frac{\text{Big} - \text{Small}}{\text{original}} \right) \times 100 = \%$$

***** Important

$$\text{Percent Increase} = \frac{\text{Amount of Increase}}{\text{Original Amount}} \times 100\% \quad (\text{Amount of Increase} = \text{New Price} - \text{Original Price})$$

$$\text{Percent Decrease} = \frac{\text{Amount of Decrease}}{\text{Original Amount}} \times 100\% \quad (\text{Amount of Decrease} = \text{Original Price} - \text{New Price})$$

OVERALL it means

$$\text{*****} \frac{\text{Difference}}{\text{Original}} \times 100 \text{ *****} \quad \text{where difference is Big - Small}$$

Example 4

(a) The price of a carton of milk in the school cafeteria increased from \$0.95 to \$1.25. What was the percent increase in price?

(b) The price of a green salad decreased from \$2.50 to \$1.95. What was the percent decrease in price?

solution

(a) $\text{Amount of Increase} =$

$$\begin{aligned} &= \text{Difference in Price} = \text{Big} - \text{Small} \\ &= \$1.25 - \$0.95 \\ &= \$0.30 \end{aligned}$$

$$\begin{aligned} \text{Percent Increase} &= \frac{\text{Diff}}{\text{Original}} = \frac{\$0.30}{\$0.95} \times 100\% \\ &\approx 0.32 \times 100\% \\ &= 32\% \end{aligned}$$

(b) $\text{Amount of decrease} =$

$$\begin{aligned} &= \text{Difference} = \text{Big} - \text{Small} \\ &= \$2.50 - \$1.95 \\ &= 0.55 \end{aligned}$$

$$\begin{aligned} \text{Percent Decrease} &= \frac{\text{Diff.}}{\text{orig}} \times 100 \\ &= \frac{\$0.55}{\$2.50} \times 100 \end{aligned}$$

$$= 0.22 \times 100$$

$$= 22\%$$

Cost of salad decreased by 22%

$$0.50 \rightarrow 0.55$$

$$\begin{aligned} \text{Diff} &= 0.55 - 0.50 \\ &= \$0.05 \end{aligned}$$

$$\begin{aligned} \% \text{inc} &= \frac{\text{Diff}}{\text{orig}} \times 100 \\ &= \frac{0.05}{0.50} \times 100 \\ &= 0.1 \times 100 \\ &= 10\% \end{aligned}$$

Class / Homework

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5, #6, #8, #9, #11, #13, #15. [REDACTED]

part 1
Difference = Big - Small

part 2

$$\frac{\text{Diff}}{\text{orig}} : \text{by}$$

decimals $\times 100\% = \underline{\quad}\%$

13) 24% of 693000 ^{original}
 0.24×693000
 153360
 people came

$$\begin{array}{r} 693000 \\ + 153360 \\ \hline 859320 \end{array} \rightarrow \text{New Pop at End 2000}$$

11% of Pop
 0.11×859320
 94525.2
 New people came

Pop 2000 + New Came
 $859320 + 94525$

953875 New Pop at end of Year 2005
 Original 693000

$$\begin{aligned} \text{Diff} &= 953875 - 693000 \\ &= 260875 \end{aligned}$$

$$\begin{aligned} \% \text{In} &= \frac{260875}{693000} \times 100 \\ &= 0.38 \times 100 \\ &\approx 38\% \text{ increase} \end{aligned}$$

Not $11\% + 24\% = 35\%$
 Since you have to base
 your second 11% on the new pop at
 the end of year 2000. not original