



Warm Up Grade 8

Finding the Percent Increase or Percent Decrease

* remember the original is always the first one**

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



Total

1. The population of classes at UNB was 25 000 in 2019 has decreased over the past two years. In the first year the population decreased by 7%. In the second year the population decreased by 4% of the previous year's populations.

a) What was the population in 2020?

$$\begin{aligned} \text{Dec} &\Rightarrow 7\% \text{ of Total} \\ &= 0.07 \times 25000 \\ &= 1750 \rightarrow \text{goes down} \end{aligned}$$

$$25000 - 1750 = 23250 \text{ New Pop}$$

B) What was the population in 2021?

$$\begin{aligned} \text{Dec} &= 4\% \text{ of Previous} \\ &= 0.04 \times 23250 \\ &= 930 \rightarrow \text{goes down} \end{aligned}$$

$$\begin{aligned} 23250 - 930 \\ = 22320 \end{aligned}$$

2. If the regular cost of a shirt is \$25.60 and it is on sale for \$16.64 then what percent did you save? (HINT percent DECREASE)

$$\begin{aligned} \text{Diff} &= \text{Big} - \text{Small} \\ &= \$25.60 - \$16.64 \\ &= \$8.96 \end{aligned}$$

$$\begin{aligned} \% \text{ Diff} &= \frac{\text{Diff}}{\text{Orig}} \times 100 \\ &= \frac{\$8.96}{\$25.60} \times 100 \\ &= 0.35 \times 100 \\ &= 35\% \end{aligned}$$

You save 35%.



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22320

1. The population of classes at UNB was 25 000 in 2019 has decreased over the past two years. In the first year the population decreased by 7%. In the second year the population decreased by 4% of the previous year's populations. What was the population in 2021?

People left \Rightarrow 7% of Pop

$$= 7\% \text{ of } 25000$$

change to decimal (How?? \rightarrow divide by 100)

$$= 0.07 \times 25000$$

$$= 1750$$

$$\begin{aligned} \text{New Pop} &= 25000 - 1750 \\ &= 23250 \end{aligned}$$

People leave \Rightarrow 4% of previous year

$$= 0.04 \times 23250$$

$$= 930$$

$$\begin{aligned} \text{New Pop} &= 23250 - 930 \\ &= 22320 \end{aligned}$$

OR

$$\begin{aligned} \text{New Pop} & \text{ is } 93\% \text{ of Orig} \\ & 0.93 \times 25000 \\ & 23250 \end{aligned}$$

OR

$$\begin{aligned} & 96\% \text{ of previous} \\ & 96\% \text{ of } 23250 \\ & 0.96 \times 23250 \\ & 22320 \end{aligned}$$

2. If the regular cost of a shirt is \$25.60 and it is on sale for \$16.64 then what percent did you save? (HINT percent DECREASE)

$$\text{Diff} = 25.60 - 16.64 = \$8.96$$

$$\% \text{ Dec} = \frac{\text{Diff}}{\text{Orig}} \times 100$$

$$= \frac{\$8.96}{\$25.60} \times 100$$

$$= 0.35 \times 100$$

$$= 35\%$$

13. a) 24% of 693 000 (Increase)

$$0.24 \times 693\,000 \\ 166\,320$$

Pop. in	693 000 + 166 320
2000	859 320

b) 11% Increase in 2005

$$11\% \text{ of } 859\,320 \\ 0.11 \times 859\,320 \\ 94\,525.2$$

Pop in 2005 →

$$859\,320 + 94\,525 \\ 953\,845$$

$$\begin{aligned} \text{c) Amt of Inc} &= 953\,845 - 693\,000 \\ &= 260\,845 \end{aligned}$$

$$\begin{aligned} \% \text{ Inc} &= \frac{\text{Amt of Inc}}{\text{Orig Amt}} \times 100\% \\ &= \frac{260\,845}{693\,000} \times 100\% \\ &= 0.376 \times 100\% \\ &= 37.6\% \end{aligned}$$

d)

14. 2005 Dec 6% of 15 194
~~★~~ $0.06 \times 15\,194$
 911.64

2005 \rightarrow $15\,194 - 912$
 14 282

2006 Dec \rightarrow 4% of 14 282
 $0.04 \times 14\,282$
 571.28

2006 \rightarrow $14\,282 - 571$
 13 711

15. a) $150\text{cm} = 90\%$ of cd, H ht

90% of $n = 150\text{cm}$

$$\frac{\cancel{0.9} \times n}{\cancel{0.9}} = \frac{150}{\cancel{0.9}}$$

$$n = 166.7\text{cm}$$

b) 98% of $n = 176$

$$\frac{\cancel{0.98} \times n}{\cancel{0.98}} = \frac{176}{\cancel{0.98}}$$

$$n = 179.6$$

ex 11

90% of "final height" = 150

$$\frac{0.9}{0.9} \times n = \frac{150}{0.9}$$

$$n = 167 \text{ cm}$$

98% of final height = 176

$$0.98 \times n = 176$$

★

16. 175

$$90\% \text{ of } n = 175$$

$$\frac{0.90 \times n}{0.9} = \frac{175}{0.9}$$

★

$$n = 194\text{cm}$$

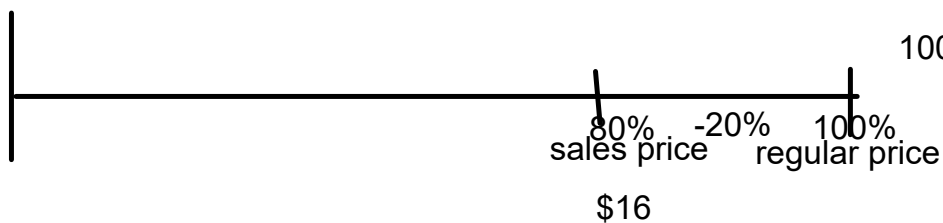
17.

NO, this is not a correct statement.

Original price = \$20

120% = \$24 x

80% is 16
10% is 2
so
100% is 20



for his calculations

Really is 16.67%

120% of sales price

$$120\% \times 16 =$$

$$1.2 \times 16 = 19.20$$

$$\frac{19.20 - 16}{19.20} = 3.2 \times 100 = 16.6\%$$

19.20 original

Extra Practice 1

$$1a) 24.5\% = 0.245 = \frac{245}{1000} = \frac{49}{200} \quad 1b) 2\frac{4}{5}\% = 2.8\% \quad 0.028 = \frac{28}{1000} = \frac{7}{250}$$

$$1c) 73.25\% = 0.7325 = \frac{7325}{10000} = \frac{293}{400} \quad 1d) 99\frac{3}{4}\% = 99.75\% = 0.9975 = \frac{9975}{10000} = \frac{39}{400}$$

$$3a) \frac{5}{200} = \frac{25}{1000} = 0.025 = 2.5\% \quad 3b) \frac{3}{150} = \frac{1}{50} = 0.02 = 2\%$$

$$3c) \frac{12}{500} = \frac{3}{125} = 0.024 = 2.4\% \quad 3d) \frac{9}{300} = \frac{3}{100} = 0.03 = 3\%$$

$$3e) \frac{16}{400} = \frac{1}{25} = 0.04 = 4\% \quad 3f) \frac{12}{250} = \frac{6}{125} = 0.048 = 4.8\%$$

$$3g) \frac{15}{600} = \frac{1}{40} = 0.025 = 2.5\% \quad 3h) \frac{28}{800} = \frac{7}{200} = 0.035 = 3.5\%$$

$$4a) 0.7\% = 0.007 = \frac{7}{100} \quad 4b) 0.44\% = 0.0044 = \frac{44}{10000} = \frac{11}{2500}$$

$$4c) 0.15\% = 0.0015 = \frac{15}{10000} = \frac{3}{2000} \quad 4d) 0.9\% = 0.009 = \frac{9}{1000}$$

$$4e) 0.92\% = 0.0092 = \frac{92}{10000} = \frac{23}{2500} \quad 4f) 0.27\% = 0.0027 = \frac{27}{10000}$$

$$4g) 0.55\% = 0.0055 = \frac{55}{10000} = \frac{11}{2000} \quad 4h) 0.36\% = 0.0036 = \frac{36}{10000} = \frac{9}{2500}$$

$$5a) 0.221 = \frac{221}{1000} = 22.1\% \quad 5b) 0.003 = \frac{3}{1000} = 0.3\%$$

$$5c) 0.2225 = \frac{2225}{10000} = \frac{89}{400} = 22.25\% \quad 5d) 0.0095 = \frac{95}{10000} = \frac{19}{2000} = 0.95\%$$

$$5e) 0.0016 = \frac{16}{10000} = \frac{1}{625} = 0.16\% \quad 5f) 0.375 = \frac{375}{1000} = \frac{3}{8} = 37.5\%$$

$$5g) 0.1875 = \frac{1875}{10000} = \frac{3}{16} = 18.75\% \quad 5h) 0.0031 = \frac{31}{10000} = 0.31\%$$

$$6) \text{Elaine } \frac{19}{24} = 0.7916666 = 79.1\%$$

Addison 81.25% Addison did better since she has a larger percentage

$$7) \text{Team A } \frac{10}{12} = 0.8333 = 83.3\%$$

$$\text{Team B } = \frac{13}{15} = 0.86666 = 86.6\%$$

Team A had the lesser percent of its team present at the tournament.

Class / Homework

Extra Practice 2: Calculating Percents

1, 2, 3 a, 4, 6a

Extra Practice 3: Solving Percent Problems

1 a, c
2 a b c
3 b c
4 b c
5, 8

3 a) 400% of 240
↓ change to decimal
 4.00×240
960

OR

mentally
400% of 240

$100\% \text{ of } 240 = 240$
 $\times 4$
400% of 240 = 960

$$4) \quad \text{Thursday} = 160$$

$$\begin{aligned} a) \quad \text{Friday} &= 120\% \text{ of Thursday} \\ &= \underset{\substack{\downarrow \\ \text{change to decimal}}}{1.2} \times \underset{\substack{\downarrow \\ 160}}{160} \\ &= 192 \end{aligned}$$

$$\text{Sat} = 75\% \text{ of Friday}$$

Attachments

Extra Practice 1 Relating Fraction, decimal and percent.pdf

Extra Practice 2 (Find the percent of a number).pdf

Extra Practice 3(% of a number is ...find the missing number, % increase or decrease).pdf