Review Problems for Chapter 2 TEST Percent

Key

How do we find <u>percent change</u> (increase or decrease)?

<u>Step 1</u>: Determine start number and ending number.

From _____ to _____

<u>Step 2</u>: Subtract to find the difference between the two numbers

<u>Step 3</u>: Set up and solve this proportion.

$$\frac{\text{amount of change}}{\text{starting amount}} \quad \frac{n}{100} = \frac{\text{change}}{\text{starting amount}}$$

In 2019 the drama club had 62 members. In 2018 it had 50 members. Find the percent change.

$62 - 50 = 12$

$50 \rightarrow 62$

$\frac{\text{increase}}{\text{start}} \quad \frac{n}{100} = \frac{12}{50}$

$n = 24$

24% increase

How do we find <u>percent error</u>?

<u>Step 1</u>: Subtract to find the amount of error between estimate and actual amounts.

<u>Step 2</u>: Set up and solve this proportion.

$$\frac{\text{amount of error}}{\text{actual amount}} \quad \frac{n}{100} = \_\_\_$$

Sara estimated that the coin jar held 789 pennies. The actual count was 892 pennies. Find her percent error.

$892 - 789 = 103$

$\frac{\text{error}}{\text{actual}} \quad \frac{n}{100} = \frac{103}{892}$

$n = 11.547$

$\approx$ 12% error

or

$\approx$ 11.5% error

<u>Simple Interest</u>

i = money earned or paid
P = money invested or borrowed
r = interest rate written as a decimal
t = number of years

Step 1: Write the formula
Step 2: Substitute what you know
Step 3: Solve resulting equation

Jen paid $2480 in interest on a 3 year loan for her car. If she borrowed $12,000, what was the simple interest rate?

$i = Prt$

$2480 = 12000r(3)$

$2480 = 36000r$

$\frac{2480}{36000} = \frac{36000r}{36000}$

$.0688... = r$

$6.888...\%$

$\approx 6.9\%$ error

or 7%

Simple Interest

i = money earned or paid
P = money invested or borrowed
r = interest rate written as a decimal
t = number of years

Step 1: Write the formula
Step 2: Substitute what you know
Step 3: Solve resulting equation

Taylor invested $4000 at 2.5% for 6 months. How much simple interest did she earn?

$i = Prt$

$i = (4000)(.025)(0.5)$

$i = 50$

$50

Find 0.2% of 168

$0.002(168) = 0.336$

or

$\frac{\text{part}}{\text{whole}} \quad \frac{.2}{100} = \frac{n}{168}$

$n = 0.336$

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125 out of what number is 28% ?

$\frac{\text{part}}{\text{whole}} \quad \frac{28}{100} = \frac{125}{n}$

$n = 446.42857\ldots$

≈ 446

or

≈ 446.4

145% of what number is 32?

$\frac{145}{100} = \frac{32}{n}$

$n = 22.0689$

≈ 22

or ≈ 22.1

A car costs $32,000. If sales tax is 5%, find the amount of tax that needs to be paid.

5% of 32000

.05(32000)

$1600 tax

OR

$\frac{\text{tax}}{\text{Reg}} \quad \frac{5}{100} = \frac{n}{32000}$

$n = \$1600$ tax

Mr. Abrams wants to leave a tip for the meal that is exactly 15%. If he leaves a tip of $24, how much was the bill?

$\frac{\text{tip}}{\text{bill}} \quad \frac{15}{100} = \frac{24}{n}$

$n = \$160$ bill

The regular cost of an item is $785. It is on sale for 35% off. Find the sale price.

35% off → pay 65%

$\frac{\text{sale price}}{\text{Reg}} \quad \frac{65}{100} = \frac{n}{785}$

$n = \$510.25$

OR

$\frac{\text{off}}{\text{Reg}} \quad \frac{35}{100} = \frac{n}{785}$

$n = \$274.75$ off

$785 - 274.75 = \$510.25$

When an item is on sale AND you have to pay sales tax, ALWAYS find the sale price first. Then calculate the tax on the sale price.

How much will you pay?

Regular Price $ 88
30% OFF Sale 6% sales tax

.30(88) = $26.40 off

88 − 26.40 = 61.60 sale price

.06(61.60) = 3.696 → $3.70 tax

61.60 + 3.70 = $65.30 cost with tax

When an item is on sale AND you have to pay sales tax, ALWAYS find the sale price first. Then calculate the tax on the sale price.

How much will you pay?

Regular Price $ 400
15% OFF Sale 5% sales tax

15% off → pay 85%

$\frac{\text{sale price}}{\text{Reg}}$ $\frac{85}{100} = \frac{n}{400}$

$n = \$340$ sale price

$\frac{\text{cost w/ tax}}{\text{sale price}}$ $\frac{105}{100} = \frac{n}{340}$

$n = \$357$

ESTIMATE - You are buying an item that regularly costs $29.89. It is on sale for 30% OFF. About how much will you pay? Use mental math strategies(no calculator) but you MUST show what you did in your head.

30% off of 29.89

$\frac{3}{10}$ off $30

$\frac{1}{10}$ off → $3

x3

$9 off

30
−9
$21

about $21

Favorite Colors

5 Purple
17 Blue
10 Red
18 Green

50

Claude claims that no more than 30% of the people surveyed chose green as their favorite color. Do you agree or disagree? Clearly defend why by clearly showing the mathematics you used to come to your decision.

Find % that chose green

$\frac{\text{green}}{\text{total}}$ $\frac{18}{50} = \frac{n}{100}$

$n = 36\%$

I disagree Claude says it's 30% or less. It is actually more than 30% since it's 36% green

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Store Sign

All items are discounted more than 40%

Claude buys an item on sale for $75. The regular price is $120. Do you agree or disagree with the store's claim? Clearly show all mathematics you used to come to your decision.

Find the percent off 120 − 75 = 45 off

$\frac{\text{off}}{\text{Reg}}$ $\frac{n}{100} = \frac{45}{120}$

$n = 37.5\%$ off

I disagree. 37.5% off is not more than 40%.