

Name: _____

Date: _____

Aim: How can we rewrite percent expressions?

Mary says that 20% off of the price of a coat is the same as paying 80% of the price. Do you agree or disagree? Explain.

Use an example: Let's say the coat is \$140.

Method 1

$$\text{disc} = \% \cdot \text{orig. price} \rightarrow \begin{array}{r} 140 \\ - 28 \\ \hline \boxed{\$112} \end{array}$$

$$n = (0.20)(140)$$

$$n = \$28$$

Method 2

$$80\% \text{ of } 140$$

$$= (0.80)(140)$$

$$\boxed{\$112}$$

\$140	
(0.2)(140) \$28	(0.8)(140) \$112

↑ discount

To find new amount after a percent decrease or percent increase:

$$\text{new amount} = (100\% - \% \text{ of decrease}) \cdot \text{the original amount}$$

$$\text{new amount} = (100\% + \% \text{ of increase}) \cdot \text{the original amount}$$

Example: 30% discount on x dollars

Example: 8% tax on x dollars

$$100\%x - 30\%x \quad (100\% - 30\%)x$$

$$1x - 0.3x \quad 70\%x$$

$$\quad \quad \quad 0.70x$$

$$100\%x + 8\%x \quad (100\% + 8\%)x$$

$$1x + 0.08x \quad 108\%x$$

$$\quad \quad \quad 1.08x$$

- If a computer costs c dollars, and the computer is on sale for 60% off. Write an algebraic expression to represent the sale price of the coat.

$$(100\% - 60\%)c \quad (1 - 0.6)c \quad 1c - 0.6c$$

$$40\%c \quad \quad \quad 0.40c$$

- A skateboard is x dollars. It is marked up 34%. Write an algebraic expression to represent the sale price of the skateboard.

$$(100\% + 34\%)x$$

$$134\%x$$

$$1.34x$$

- ~~If a computer costs c dollars, and the computer is on sale for 60% off. Write an algebraic expression to represent the sale price of the coat.~~

4. A skateboard is x dollars. It is marked up 34%. Write an algebraic expression to represent the sale price of the skateboard.

5. Leo bought a used car for x dollars. One year later, the value of the car is represented by $0.88x$. By what percent did the car change over the year? Was it an increase or a decrease?

12% decrease

6. The population of a city, p , is expected to increase 7.5% next year. Write an expression to represent the expected population next year.

107.5% p

1.075 p

$1p + 0.075p$

7. The expression $1.08(0.60p)$ represents the total cost Naomi paid for a jacket that was originally priced p dollars. Based on the expression, write a situation that the expression could represent.

40% discount

8% tax

8. State whether each algebraic expression is a % increase or % decrease and by how much.

	increase/decrease	%
a. $0.75x$	decrease	25%
b. $1.25x$	increase	25%
c. $0.40x$	decrease	60%
d. $(120\%)(x)$	increase	20%
e. $(70\%)(x)$	decrease	30%
f. 63% of a number x	decrease	37%
g. 111% of a number x	increase	11%

John buys his clothes at Super Discounts. On Saturday, he bought shoes regularly priced at \$40 for 25% off, and a jacket regularly priced at \$100 for 30% off. Write an expression to calculate his total bill?

$$(0.75)(40) + (0.70)(100)$$

\$100

A CD player that regularly sells for \$79.00 is on sale at a 15% discount. Then, 6.5% tax is added to the bill. What is the total cost?

$$(1.065)(0.85)(79)$$

\$71.51