Activity/Lesson:

Percent of Increase and Decrease

Example 1:

Activity/Lesson continued:

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Activity/Lesson continued:

Method 2: **Proportion**

Method 3: **Direct translation**

50 is what percent of 625?

$$50 = \frac{x}{100} \quad 625$$

$$50 = \frac{x}{100} \cdot \frac{625}{1}$$

$$50 = \frac{x \cdot 25 \cdot \cancel{25}}{4 \cdot \cancel{25}}$$

$$50 = \frac{x \cdot 25}{4}$$

$$4(50) = 4\left(\frac{25 \cdot x}{4}\right)$$

$$200 = 25x$$

$$\frac{200}{25} = \frac{25x}{25}$$

$$8 = x$$

$\therefore$ 50 is 8% of 625, so the percent of increase is 8%

The percent of increase is 8%

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Activity/Lesson continued:

You Try: A blouse cost $40 originally. It was marked up to $50. What was the percent of increase? Solve at least two different ways.
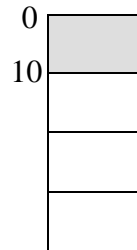
Solution:
The difference in the original and new amount is: $$\$50 - \$40 = \$10.$$
The original amount is $40.
Question: $10 is what percent of $40?

Method 1: **Bar Diagrams**

$10 is 25% of $40, so the
percent of increase is 25%.

Assessment:

Assessment solutions:

1) **<u>Before</u> you solve problems A and B below, read the problems and answer the following question:**
   - How do you think the answers will compare? Why?

     Students might think the percent of increase for A will be the same as the percent of decrease in B, since in A, the price goes up from $20 to $25 and in B, the price goes down from $25 to $20. You might have the students share their thoughts with the class on this before they solve the problems.

   A)   Last year, Ace Jeans cost $20 a pair at BJ's Department Store. This year, Ace Jeans cost $25 a pair. Find the percent of increase. (Use at least two different approaches.)

   The percent of increase is 25%. Check to see that students used at least two different approaches.

   B)   Last week, BJ's put the $25 jeans on sale for $20. Find the percent of decrease. (Use at least two different approaches.)

   The percent of decrease is 20%. Check to see that students used at least two different approaches.

2) How do your answers for #1 and #2 compare? Show/explain why this is true.

   The percent of increase is greater than the % of decrease. This happens because you are dividing the same numerator by 2 different numbers. For the percent of increase, you are dividing by a smaller number than for the percent of decrease.

   a = the larger amount
   b = the smaller amount

   % of increase $= \dfrac{a-b}{b}$

   % of decrease $= \dfrac{a-b}{a}$

   $$\dfrac{a-b}{b} > \dfrac{a-b}{a}$$

Assessment solutions continued:

The next day, have students share their responses to this assessment. You can have students explore finding the decimal equivalents of fractions with the same numerator and different denominators.

$$\frac{5}{1} = 5$$

$$\frac{5}{2} = 2.5$$

$$\frac{5}{3} = 1.\overline{6}$$

$$\frac{5}{4} = 1.25$$

$$\frac{5}{5} = 1$$

$$\frac{5}{6} = 0.8\overline{3}$$

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