LEARNING OBJECTIVE: We will calculate percent increases and percent decreases. (G7M4L4)

CONCEPT DEVELOPMENT:

Percent Increase: the percent represented by an increase of a quantity to the whole.

Example: I have 30 students in my class, and then 3 more get added. The number of students in my class increased by 10%

Percent Decrease: The percent represented by a decrease of a quantity to the whole.

Example: Riley had 4 kit kat bars, and then ate 1. The number of kit kat bars he has decreased by 25%.

We can use the same formulas (along with careful reading) to help us:

$$Quantity = Percent \times Whole$$

(the amount of increase or decrease)   and   (original amount)

$$\frac{350}{350} = 100\% \downarrow$$

$$Percent = \frac{Quantity}{Whole}$$ $\frac{1}{2}$ $\frac{1}{5}$ =. 2 = 20% ↓

We can think of the whole as the **original amount**, and the quantity as the **amount of the increase or decrease**.

Examples:
I start out with $50 and now I have $75 after mowing lawns. $\frac{25}{50} = \frac{1}{2} = .5 = 50\%$ increase

① What is the original amount? $50

② How much did that amount change? $25 ↑

I had $50, but now I have $30 because I bought a stuffed animal.

org. amt: $50 $\frac{20}{50} = \frac{2}{5} = .4 = 40\%$ decrease

change: $20 ↓

Guided Practice:

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Steps for Finding out Percent Increase or Decrease

1. Determine if you're finding an increase of a decrease.
2. Identify and note important pieces of information: new quantity, old quantity, percent of change, amount of the change.
3. Use the formula from page 1 to find the missing piece of information.
4. Convert to a percent by multiplying by 100.
5. Interpret your answer in the context of the story.

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Kylie had 5 rings. If she gets another ring for her birthday, what will be the percent increase in her ring collection? $$\% = \frac{\text{amt. of change}}{\text{original amt.}}$$ $$\% = \frac{1}{5} = .2$$ 20% increase	Evan has 45 trading cards in his collection, but then he adds 9 more cards. What is his percent increase? $$\% = \frac{9}{45} = \frac{1}{5} = .2$$ 20% increase
Naveen reads 60 pages of his book each day. Since he is really enjoying the book, he wants to read 15% more than he currently reads. If he does that, how many pages will he be reading? ORIG. AMT: 60 PCT↑ : 15 AMT OF CHANGE: X AMT. OF CHANGE = PCT CHANGE • ORIG AMT $$X = .15(60)$$ $$x = 9$$ 69 pages each day	Catherine knows of 8 different designs for fingernail paint. She wants to increase this by 50% so she can offer her customers different styles. If she does that, how many different styles will she know? $$x = .50(8)$$ $$x = 4 \leftarrow \text{amount of change}$$ 12 styles

Personal trainers recommend that when you are training for a marathon, you should not increase your mileage (how many miles you run for) more than 10% per week. If I ran 28 miles one week, what would the most I could have ran the week before and still have been within the trainer recommendations?	After reports that it had sold more Apple Watches than expected in 2016, the stock price of Apple shot up by 10%. The new price is $121. What was the price before this increase?

ORIG. AMT – what I ran last week
"x"

28 miles is 110% of what I ran last week.

$$\frac{28}{1.1} = \frac{1.1\,x}{1.1}$$

$$25.\overline{45} = x$$

LAST WEEK I COULD HAVE RAN AT MOST 25.45 miles.

ORIG. AMT: Price before increase. = "x"

121 is 110% of price before increase

$$\frac{121}{1.1} = \frac{1.10\,x}{1.1}$$

$$x = 110$$

Price before increase was $110.00

Alessio wanted to lose weight, so he decided that he would try to reduce his daily calorie intake by 7%. He was used to eating about 2,500 calories each day. How many calories would he be permitted under his new diet?	Chris decided he had too many marbles. He told his mother that to make room in his closet, he was going to get rid of 40% of the 4,800 marbles in his collection. How many marbles did he have left?

REDUCE/DECREASE BY 7%
ORIGINAL AMOUNT: 2,500
AMT OF CHANGE: x

$$x = (07\%)(2500)$$

175 fewer calories

$$2500 - 175 = 2325$$

Alessio can eat 2325 calories each day.

$$40\% = .4$$

$$x = (.4)(4800)$$

$$x = 1920 \leftarrow \text{# of marbles Chris threw out.}$$

$$4800 - 1920 = 2880$$

Chris has 2880 marbles left

At the beginning of the school year, I had 200 expo markers. Right now, I only have 80 that are working properly. What is the percent change in the number of markers that I have?

$$\% = \frac{amt.\ of\ change}{orig.\ amt.}$$

$$\% = \frac{120}{200} = .6$$

60% Decrease in the # of markers

Saige had $2500 in her bank, but then she decided to buy patio furniture for her back yard. She now has $2100 in her bank account. What is the percent change in her bank account?

$$\% = \frac{amt.\ of\ change}{orig.\ amt.}$$

$$= \frac{400}{2500} = .16$$

16% decrease. in her bank account

August's favorite card game was Texas Hold'em. Within 15 minutes of sitting down at the table, he lost 25% of his money. He had $27 left. How much money did he begin with?

If he lost 25%, he has 75% left.

$$\frac{75\% \cdot x}{.75} = \frac{27}{.75}$$

$$\boxed{x = 36}$$

August started with $36 and lost $9

Kamelia decided she wanted to watch 30% less TV each week. She achieved this goal, and now watches only 17.5 hours each week. How much TV did she watch before?

$$\frac{.70(x)}{.70} = \frac{17.5}{.70}$$

$$x = 25$$

Kamelia was watching 25 hours of TV each week

① Amt. of change = % · orig. amt.

② % = $\frac{amt.\ of\ change}{original\ amt.}$

4 ③ Orig. Amt = $\frac{amt.\ of\ change}{\%}$

Independent Practice:
Give out homework for independent practice.

Activating Prior Knowledge:
We can find percents of wholes.

Jessica took 30% of the total shots taken at the basketball game. There were 40 shots taken. How many attempts did Jessica make?	Andrew wanted to get a new pair of sneakers that cost $150. His parents told him he needed to give them 65% of the cost, and they would buy the sneakers for him. How much Andrew have to contribute?

Closure:
Scott wisely invested his money in shares of McDonald's stock a long time ago. The value of his stock has increased by 350% since he bought the stock. If this current value is $5000, how much did he invest originally?

Teacher Notes:
Lesson 4, mod 4 grade 7 Homework…can also be independent practice.