Teacher___Mrs. Wood____ Subject _Math_____ Dates: Week 4 (May 11 - May 15) 7-12 Weekly Planner

Welcome to our Distance Learning Classroom! **Student Time Expectation per day: 30 minutes**

Content Area & Materials	Learning Objectives	Tasks	Check-in Opportunities	Submission of Work for Grades
7th Grade Math **PAPER PACKET:** **Digits 3-3** • **Lesson and examples** • **Close and Check** • **Homework worksheet** **Digits 3-5** • **Lesson and examples** • **Close and Check** • **Homework worksheet** **Review Worksheet - Solving Inequalities** **ONLINE:** • **Digits 3-3 (lessons and homework)** • **Digits 3-5 (lessons and homework)** • **Review Worksheet - Solving Inequalities**	**Essential Question:** How can proportional relationships be used to solve percent and ratio problems? **Students will know...** To solve for a percentage, use the percent equation, $part = percent * whole$, $p = \% * w$ as a proportional relationship (e.g. percent over 100, is the same as part divided by whole).	**PAPER PACKET** with lesson, examples, "Close and Check," homework for Digits 3-3 and 3-5, review worksheet (Solving Inequalities) -or- **ONLINE:** Please log on to pearsonrealize.com to work through each part of the lessons for Digits 3-3 and 3-5. The "Close and Check" page can be found by clicking on "Companion Page" at the bottom of the Close and Check screen for each lesson. The review worksheet will be sent by email. **Don't forget to click on Solution at the bottom of each example and "Got it?" to check your answer.**	Mrs. Wood is available during office hours at the times below by: • Meeting on Microsoft Teams or Zoom. Access by Teams: logging in with student email and password to Office 365 at https://www.tracy.k12.ca.us/students Zoom: clicking the link that is emailed out prior to the meeting. • by email (cwood@tusd.net) • call/text (209-597-8652) **Email or call/text will get a response within 24 hours.**	Students are expected to submit: 1. 3-3 Homework 2. 3-5 Homework 3. Review Worksheet **If submitting the PAPER PACKET on May 15, label with:** Mrs. Wood Your full name class period Submit the hard copy to the school on May 15 or take pictures of the work and text/email to Mrs. Wood by May 15. **ONLINE (by May 15):** Submit homework in Digits and email any written work (scanned document or cell phone picture).

Scheduled, *if possible*, **Shared Experience**	Teams/Zoom meetings and phone calls can facilitate meaningful discussions.
Scaffolds & Supports	Students working ONLINE should try out the Help functions in Digits. Notes for each lesson are included with the PAPER PACKETS.

Teacher Office Hours Available by Teams, email, and call/text	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
	10–11am	**11:30am–12:30pm**	**10–11am**	**11:30am–12:30pm**	**10–11am**

Digits 3-3: Simple Interest

Key Concept

Key Concept

When you deposit money in a bank account, the bank pays you **interest** for the right to use your money for a period of time.

Simple Interest Formula: $I = p \cdot r \cdot t$

Principal (p) is the original amount of money deposited.

Interest is calculated based on a percent of the principal. That percent is called the **interest rate** (r).

Time (t) is the number of years money is deposited.

Simple interest (I) is interest calculated only on the principal.

Part 1: Understanding the Simple Interest Formula

Part 1

Example Understanding the Simple Interest Formula

Suppose you deposit $400 in a savings account and keep it in the bank for 6 years. The annual interest rate is 5%. Identify each value in the simple interest formula.

Words Interest is principal times rate times time

to

Equation ▪ = ▪ · ▪ · ▪

▪ = ▪ · ▪ · ▪

Part 1 (continued)

Solution

Words	Interest	is	principal	times	rate	times	time
to Equation	I	$=$	p	$\cdot$	r	$\cdot$	t
	120	$=$	400	$\cdot$	0.05	$\cdot$	6

Substitute $p = 400$, $r = 0.05$, and $t = 6$, then multiply, $I = 120$.

Got It?

Suppose you deposit $500 in a bank account that earns simple interest at 1.2% per year. You keep it in the bank for two years. Which of the following is/are true?

I. $I = 12$ **II.** $p = 1.2\%$

III. $r = 500$ **IV.** $t = 2$

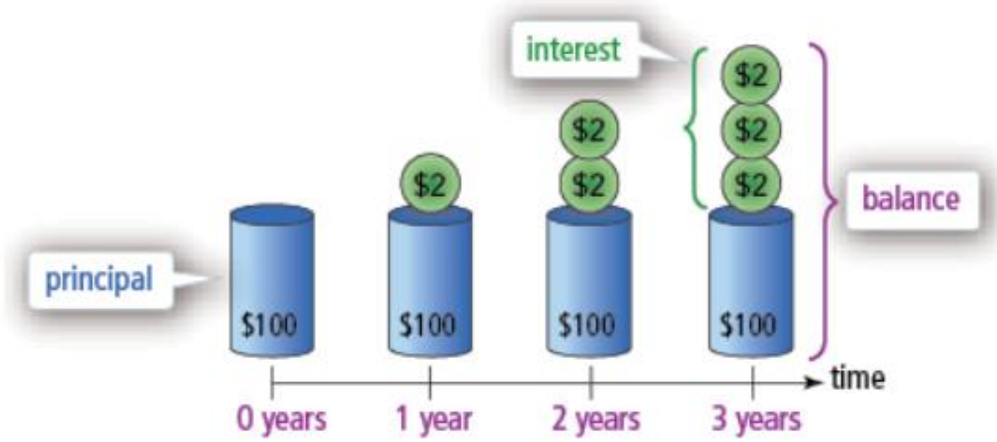
Part 2: Calculating Simple Interest

Part 2

Intro

The principal in an account plus the accumulated interest is the **balance**.

balance = principal + interest



Part 2 (continued)

Part 2

Example Calculating Simple Interest

A bank manager wants to encourage customers to open a certificate of deposit (CD) account. He decides to make a poster to show how much interest a CD earns over time. Help the manager complete the table.

If you deposit $2,500 at 3.5% annual interest...		
Time (years)	**Simple Interest Earned**	**New Account Balance**
0	■	■
1	■	■
2	■	■
3	■	■
4	■	■

Solution

Time: 0 years

$$I = p \cdot r \cdot t$$
$$= 2{,}500 \cdot 3.5\% \cdot 0$$
$$= 2{,}500 \cdot 0.035 \cdot 0$$
$$= 0$$

$3.5\% = \frac{3.5}{100}$
$= 0.035$

Balance = principal + interest
= 2,500 + 0
= 2,500

Time: 1 year

$$I = p \cdot r \cdot t$$
$$= 2{,}500 \cdot 0.035 \cdot 1$$
$$= 87.50$$

You earn $87.50 in simple interest after one year.

Balance = principal + interest
= 2,500 + 87.50
= 2,587.50

Part 2 (continued)

Time: 2 years

$$I = p \cdot r \cdot t$$
$$= 2{,}500 \cdot 0.035 \cdot 2$$
$$= 175$$

You earn \$175 in simple interest after two years.

Balance = principal + interest
= 2,500 + 175
= 2,675

Time: 3 years

$$I = p \cdot r \cdot t$$
$$= 2{,}500 \cdot 0.035 \cdot 3$$
$$= 262.50$$

You earn \$262.50 in simple interest after three years.

Balance = principal + interest
= 2,500 + 262.50
= 2,762.50

Time: 4 years

$$I = p \cdot r \cdot t$$
$$= 2{,}500 \cdot 0.035 \cdot 4$$
$$= 350$$

You earn \$350 in simple interest after four years.

Balance = principal + interest
= 2,500 + 350

If you deposit \$2,500 at 3.5% annual interest...

Time (years)	Simple Interest Earned	New Account Balance
0	\$0.00	\$2500.00
1	\$87.50	\$2,587.50
2	\$175.00	\$2,675.00
3	\$262.50	\$2,762.50
4	\$350.00	\$2,850.00

Part 2 (continued)

Got It?

A new bank customer with $5,000 to deposit looks at the manager's poster. The customer wants to open a CD to earn money for his retirement. If he wants to have $5,500 in the CD, how long does he need to keep the account?

If you deposit $2,500 at 3.5% annual interest...		
Time (years)	**Simple Interest Earned**	**New Account Balance**
0	$0.00	$2,500.00
1	$87.50	$2,587.50
2	$175.00	$2,675.00
3	$262.50	$2,762.50
4	$350.00	$2,850.00

Part 3: Calculating Simple Interest for Partial Years

Part 3

Intro

In some situations, interest is accumulated on a monthly basis.

When r is an annual interest rate in the formula $I = p \cdot r \cdot t$, time t is in years.

To find how much interest you have after 3 months, you need to convert months to years.

$$t = \frac{3}{12}$$

3 months' time

12 months in a year

$$= \frac{1}{4}$$

Example Calculating Simple Interest for Partial Years

After 8 months, does Mia still have the higher balance? Explain.

Name on Account: Alex	Name on Account: Mia
Principal: $2,950	Principal: $3,000
Annual interest rate: 4%	Annual interest rate: 2.5%

Part 3 (continued)

Solution

Time: 8 months

or $\frac{8}{12}$ years

$$I = p \cdot r \cdot t$$
$$= 2{,}950 \cdot 4\% \cdot \frac{8}{12}$$
$$= 2{,}950 \cdot 0.04 \cdot \frac{2}{3}$$
$$= 118 \cdot \frac{2}{3}$$
$$\approx 78.67$$

After 8 months Alex has earned about \$78.67 in interest.

$$I = p \cdot r \cdot t$$
$$= 3{,}000 \cdot 2.5\% \cdot \frac{8}{12}$$
$$= 3{,}000 \cdot 0.025 \cdot \frac{2}{3}$$
$$= 75 \cdot \frac{2}{3}$$
$$= 50$$

After 8 months Mia has earned \$50 in interest.

Balance = principal + interest
= 2,950 + 78.67
= 3,028.67

After 8 months Alex has \$3,028.67.

Balance = principal + interest
= 3,000 + 50
= 3,050

After 8 months Mia has \$3,050.

Yes, Mia still has the higher balance after 8 months.

Got It?

After 16 months, does Mia still have the higher balance? Explain.

Name on Account: Alex
Principal: \$2,950
Annual interest rate: 4%

Name on Account: Mia
Principal: \$3,000
Annual interest rate: 2.5%

Got It? Solutions

Part 1: I and IV
Part 2: 3 years
Part 3: No. After 16 months, Alex has \$3,107.33 and Mia has \$3,100.

Close and Check

Focus Question

Why is simple interest called "simple"? When would you use simple interest?

Do you know HOW?

1. U.S. savings bonds pay 1.4% interest. You purchase \$750 in savings bonds and hold them for $2\frac{1}{2}$ years. Circle the true statement(s).

A. $I = 1.4\%$

B. $p = 750$

C. $r = 26.25$

D. $t = 2.5$

2. You buy \$2,500 of savings bonds at 1.7% interest. How many years will it take for your investment to equal \$3,000? Round your answer to the nearest whole year.

3. Suppose after 15 months you earn \$74.80 in interest on an investment that earns 1.6% interest. What was your principal investment?

Do you UNDERSTAND?

4. Reasoning You and your friend both have savings accounts that pay 3.5% interest. Do you both earn the same amount of money in interest? Explain how you know.

5. Error Analysis Your friend says she has \$75 in her savings account that pays 3.5% interest. She finds the amount of interest earned in one year. Is she correct? Explain.

$I = 75 \cdot 3.5 \cdot 1$

$I = 262.50$

Close and Check

Focus Question

Why is simple interest called "simple"? When would you use simple interest?

Sample: Simple interest might be called "simple" because it is based on the principal only. This makes the interest the same amount every year. You would use simple interest when you have a financial account that applies simple interest to the account.

SAMPLE SOLUTIONS ARE SHOWN BELOW.

Do you know HOW?

1. U.S. savings bonds pay 1.4% interest. You purchase \$750 in savings bonds and hold them for $2\frac{1}{2}$ years. Circle the true statement(s).

A. $I = 1.4\%$

B. $p = 750$

C. $r = 26.25$

D. $t = 2.5$

2. You buy \$2,500 of savings bonds at 1.7% interest. How many years will it take for your investment to equal \$3,000? Round your answer to the nearest whole year.

12 years

3. Suppose after 15 months you earn \$74.80 in interest on an investment that earns 1.6% interest. What was your principal investment?

\$3,740

Do you UNDERSTAND?

4. Reasoning You and your friend both have savings accounts that pay 3.5% interest. Do you both earn the same amount of money in interest? Explain how you know.

Not necessarily. The amount of interest earned depends on the account balance.

5. Error Analysis Your friend says she has \$75 in her savings account that pays 3.5% interest. She finds the amount of interest earned in one year. Is she correct? Explain.

$I = 75 \cdot 3.5 \cdot 1$
$I = 262.50$

No. She needs to convert the interest rate to the decimal 0.035 before multiplying. She will earn about \$2.63 in interest.

Digital Resources

1. To find simple interest, you multiply the principal (in dollars), the interest rate (as a decimal), and the time in years. The equation $24.00 = 400 \cdot 0.015 \cdot 4$ shows how to find the simple interest for a certain account after 4 years.

   a. What is the interest rate (as a percent)?

   A. 0.015% B. 400%
   C. 1.5% D. 24.00%

   b. How much is the simple interest?

   A. \$4 B. \$1.50
   C. \$24.00 D. \$400

   c. What is the principal?

   A. \$4 B. \$24.00
   C. \$400 D. \$1.50

2. Suppose you deposited \$100 in a savings account 4 years ago. The simple interest rate is 2.2%. The interest that you earned in those 4 years is \$8.80.

   Which of the following is/are true? Select all that apply.

   A. $r = 2.2\%$ B. $p = 100$
   C. $I = 4$ D. $t = 8.80$

3. An account has a principal of \$500 and a simple interest rate of 3.3%. **Figure 1** below shows the simple interest earned and the new account balance for 1, 2, and 3 years. Complete the table in **Figure 1** for the fourth year.

4. If the simple interest on \$2,000 for 2 years is \$320, then what is the interest rate?

5. Edward deposited \$6,000 into a savings account 4 years ago. The simple interest rate is 3%.

   a. How much money did Edward earn in interest?

   b. What would be his new account balance?

6. **Think About the Process** You deposit \$2,900 into a bank account with a simple interest rate of 10%.

   a. How do you find your account balance after 5 years?

   A. First use $I = prt$ to find the simple interest earned after 5 years. Then add that to the rate.

   B. First use $I = prt$ to find the simple interest earned after 5 years. Then add that to the time.

   C. First use $I = prt$ to find the simple interest earned after 5 years. Then subtract that from the principal.

   D. First use $I = prt$ to find the simple interest earned after 5 years. Then add that to the principal.

   b. What will your account balance be after 5 years?

(Figure 1)

Interest Earned

Time (years)	Simple Interest Earned (\$)	New Account Balance (\$)
1	16.50	516.50
2	33.00	533.00
3	49.50	549.50
4	■	■

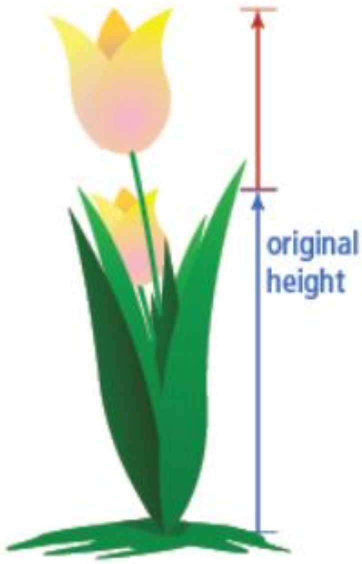
Digits 3-5: Percent Increase and Decrease

Key Concept

Key Concept

You can use a percent to describe how much something has increased or decreased.

A **percent of change** describes how much a quantity has changed, expressed as a percent of the original quantity.

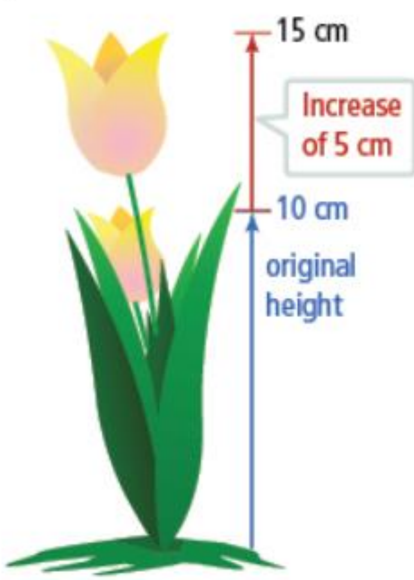


part = percent · whole

amount of change = percent of change · original quantity

$$\text{percent of change} = \frac{\text{amount of change}}{\text{original quantity}}$$

When a quantity increases, the percent of change is called a **percent increase**.



$$\text{percent of change} = \frac{\text{amount of change}}{\text{original quantity}}$$

$$\text{percent increase} = \frac{5}{10}$$

$$= \frac{1}{2}$$

$$= 0.5$$

$$= 50\%$$

The height of the flower increased by 50%.

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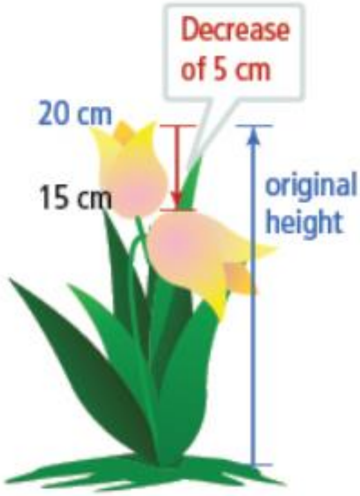
Key Concept (Continued)

continued

When a quantity decreases, the percent of change is called a **percent decrease**.



$$\text{percent of change} = \frac{\text{amount of change}}{\text{original quantity}}$$

$$\text{percent decrease} = \frac{5}{20} = \frac{1}{4} = 0.25 = 25\%$$

The height of the flower decreased by 25%.

Part 1: Finding Percent Increase

Part 1

Example Finding Percent Increase

Identify the percent increase in each situation.

Month 1 record:	15 push-ups	100 crunches
Month 2 record:	30 push-ups	114 crunches
	▪ % increase	▪ % increase

Solution

Push-Ups

$$\text{amount of change} = 30 - 15 = 15$$

$$\text{percent increase} = \frac{\text{amount of change}}{\text{original quantity}} = \frac{15}{15} = 1 = 100\%$$

Crunches

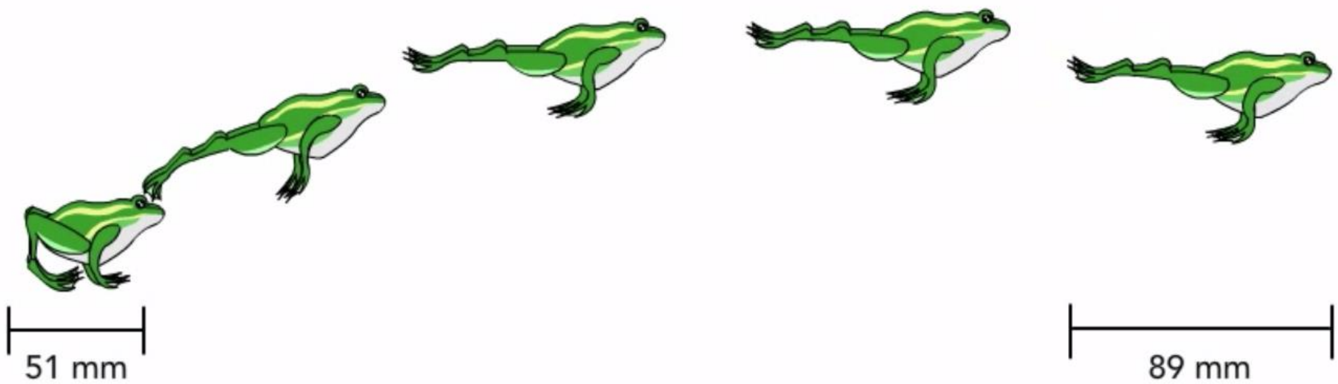
$$\text{amount of change} = 114 - 100 = 14$$

$$\text{percent increase} = \frac{\text{amount of change}}{\text{original quantity}} = \frac{14}{100} = 14\%$$

Part 1 (continued)

Got It?

A pet frog measures 51 mm in body length while sitting. Its body length extends to 89 mm while jumping. Find the approximate percent increase in body length of the frog from sitting to jumping.



Part 2: Finding Percent Decrease

Part 2

Example Finding Percent Decrease

The force of gravity on the Moon is different from the force of gravity on Earth. This means that an object has a different weight on the Moon than it does on Earth. By what percent does an astronaut's weight decrease on the Moon?

Astronaut Weight (lb)

On Earth	On the Moon
154	25.5

Solution

The astronaut's weight decreased from **154 lb** on the Earth to **25.5 lb** on the Moon.

$$\text{amount of change} = 154 - 25.5$$
$$= 128.5$$

decrease of 128.5 lb

$$\text{percent decrease} = \frac{\text{amount of change}}{\text{original quantity}}$$
$$= \frac{128.5}{154}$$
$$\approx 0.8344$$
$$= 83.44\%$$

The astronaut's weight decreased by about 83.4% on the Moon.

Part 2 (continued)

Got It?

Every 10 years, the U.S. government takes a census, or survey, of the population. One possible result of changes in population is that the number of U.S. representatives for a state may change. Find the approximate percent decrease in the number of representatives for Michigan.

Number of House Representatives for Michigan

In 2000	In 2010
15 representatives	14 representatives

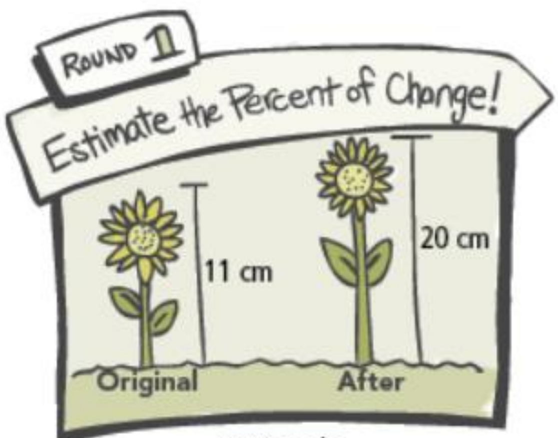
Part 3: Estimating Percent of Change

Part 3

Example Estimating Percent of Change

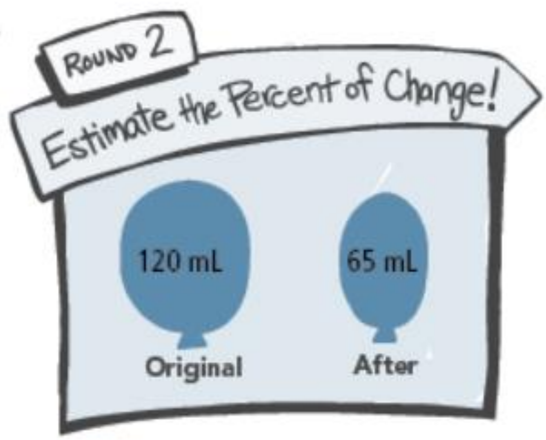
Estimate the percent of change for each Round.

a.



Not to scale.

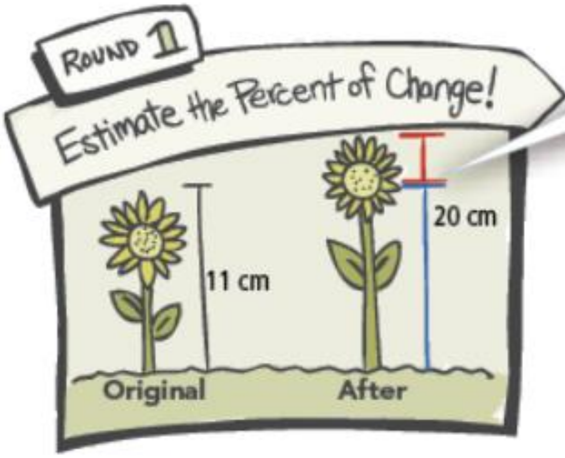
b.



Part 3 (continued)

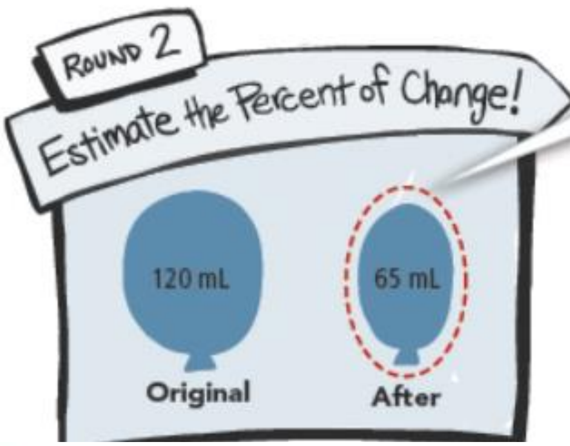
Solution

a.



The sunflower grew by adding about three-fourths of its original size, so the percent of change is about a 75% increase.

b.



The balloon shrank by losing about half of its original size, so the percent of change is about a 50% decrease.

Check

a.

$$\begin{aligned}\text{percent of change} &= \frac{\text{amount of change}}{\text{original quantity}}\\ &= \frac{20 - 11}{11}\\ &= \frac{9}{11}\\ &\approx 0.82\\ &= 82\%\ \text{increase} \checkmark\end{aligned}$$

82% is close to 75%, so the estimate is correct.

b.

$$\begin{aligned}\text{percent of change} &= \frac{\text{amount of change}}{\text{original quantity}}\\ &= \frac{120 - 65}{120}\\ &= \frac{55}{120}\\ &\approx 0.46\\ &= 46\%\ \text{decrease} \checkmark\end{aligned}$$

46% is close to 50%, so the estimate is correct.

Got It?

Estimate the percent of change.

Got It? Solutions	Part 1: About 75% Part 2: About 6.7% Part 3: About a 25% decrease

Close and Check

Focus Question

MP4, MP7

How can you use a percent to represent change?

Do you know HOW?

1. The banded ribbon worm is a carnivorous aquatic worm. It measures about 2.5 ft when contracted and up to 25 ft when expanded. Find the percent increase between the contracted and expanded length of a banded ribbon worm.

2. The oceans' tide levels vary based on the phases of the moon. Find the percent decrease in tide levels when high tide is 4.25 ft and low tide is 0.75 ft above sea level.

3. The national debt in 2000 was about \$5.7 trillion. In 2010, the national debt had risen to about \$13.6 trillion. Find the approximate percent of change in the national debt during that ten-year period.

Do you UNDERSTAND?

4. Reasoning Explain how you know whether a percent of change is a percent increase or a percent decrease.

5. Writing Give a real-world example of when it might be useful to calculate a percent of change. Would you expect the percent of change to be a percent increase or a percent decrease?

Close and Check

Focus Question

MP4, MP7

How can you use a percent to represent change?

Sample: A percent represents change by comparing the amount of change to the original quantity. The amount of change is the part. The original quantity is the whole. The percent is the percent of change as an increase or decrease.

SAMPLE SOLUTIONS ARE SHOWN BELOW.

Do you know HOW?

1. The banded ribbon worm is a carnivorous aquatic worm. It measures about 2.5 ft when contracted and up to 25 ft when expanded. Find the percent increase between the contracted and expanded length of a banded ribbon worm.

900%

2. The oceans' tide levels vary based on the phases of the moon. Find the percent decrease in tide levels when high tide is 4.25 ft and low tide is 0.75 ft above sea level.

82.4%

3. The national debt in 2000 was about $5.7 trillion. In 2010, the national debt had risen to about $13.6 trillion. Find the approximate percent of change in the national debt during that ten-year period.

139% increase

Do you UNDERSTAND?

4. Reasoning Explain how you know whether a percent of change is a percent increase or a percent decrease.

If the original amount decreases, the percent of change is a percent decrease. If it increases, it is a percent increase.

5. Writing Give a real-world example of when it might be useful to calculate a percent of change. Would you expect the percent of change to be a percent increase or a percent decrease?

Older cars are less gas efficient. You might want to find the percent decrease in miles per gallon to decide whether to get a tune-up or replace the car.

3-5 | Homework

1. If the original quantity is 10 and the new quantity is 13, what is the percent increase?
2. Craig likes to collect records. Last year he had 10 records in his collection. Now he has 12 records. What is the percent increase of his collection?
3. If the original quantity is 5 and the new quantity is 3, what is the percent decrease?
4. At noon, a tank contained 10 cm of water. After several hours, it contained 7 cm of water. What is the percent decrease of water in the tank?
5. **Estimation** Suppose the original quantity is 13 and the new quantity is 1.
   a. Which of these is the best estimate for the percent change?
      A. 50% **B.** 25%
      C. 100% **D.** 75%
   b. Is this an example of a percent increase or a percent decrease?
6. If the original quantity is 15 and the new quantity is 19, which of these is the best estimate for the percent change?
   A. 50% increase
   B. 100% decrease
   C. 75% increase
   D. 25% increase
7. Last year, the Debate Club had 7 members. This year there are 12 members in the club. Which of these is the best estimate for the percent change in the number of club members?
   A. 25% increase
   B. 100% decrease
   C. 75% increase
   D. 50% decrease

PRACTICE TUTORIAL

Name: ____________________

5-6 Additional Practice

Scan for Multimedia

Leveled Practice **For 1–4, solve each inequality.**

1. $3 + 4x > 27$

First, subtract $\boxed{}$ from both sides.

Then $\boxed{}$ both sides by 4.

$x > \boxed{}$

2. $3.5 + 4t \leq 39.5$

3. $12 - 3y < 27$

4. $8 - \frac{1}{4}n \geq 20$

5. a. Solve: $\frac{1}{2}x + 8 \leq 10$

b. Solve: $-3x - 24 \leq -36$

c. Which of the following correctly compares the solutions of the inequalities above?

Ⓐ The inequalities have no common solutions.

Ⓑ The inequalities have only one common solution.

Ⓒ The inequalities have the same solutions.

Ⓓ The inequalities have one uncommon solution.

6. **Make Sense and Persevere** Amelia can spend no more than $89 to rent a car for a day trip. A rental car costs $35 per day plus $0.20 per mile. Write and solve an inequality to find the possible distance in miles, *m*, that Amelia can drive without exceeding her budget.

7. **a.** Solve: $9x - 4 > 95$

   b. Solve: $4x + 10 > 54$

   c. Which of the following correctly compares the solutions of the inequalities above?

   Ⓐ The inequalities have the same solutions.

   Ⓑ The inequalities have only one common solution.

   Ⓒ The inequalities have one uncommon solution.

   Ⓓ The inequalities have no common solutions.

8. **Higher Order Thinking** The inequalities $\frac{1}{5}x + 7 \leq 11$ and $-\frac{1}{5}x - 7 \geq -11$ have the same solutions.

   a. What are the solutions for both inequalities?

   b. Without performing any calculations, how can you tell that the inequalities will have the same solutions?

Assessment Practice

9. Eugene wants to ride his bike at least 40 miles today. The first hour was mostly downhill, and he rode 13 miles. He has 3 more hours to ride. Write and solve an inequality to find how many miles per hour Eugene needs to ride to meet his goal.