Name_____ Period _____ Date _____

7-12
STUDENT PACKET

MATHLINKS: GRADE 7
STUDENT PACKET 12
PERCENT

WORD BANK

Word or Phrase	Definition or Description	Picture or Example
commission		
discount (markdown)		
interest		
interest rate		
markup		
percent		
percent of a number		
principal		

PERCENT INCREASE AND DECREASE

Summary

We will learn some common vocabulary related to percent. We will learn how to find percent increases and decreases.

Goals

- Find percents of numbers.
- Find percent increases and decreases.
- Use computation and mental math strategies to find the percent of a number efficiently.

Warmup

Use sense-making strategies and procedures to find each percent of $240 below.

1. 50%	2. 150%
3. 15%	4. 1%
5. 17%	6. 0.5%

7. Janie got 24 out of 40 problems correct on a quiz. What percent of the problems did she get correct?

GRATUITIES

1. Many people provide services for which they receive gratuities, or tips. Better service frequently gets the worker a better tip. List four jobs for which workers might receive tips.

Calculate the **total** amount you pay, including tip, for each amount below.

Amount	With 5% Tip	With 10% Tip	With 15% Tip	With 20% Tip
2. $40				
3. $60				
4. $90				
5. $25				
6. $28				

7. Suppose you pay a taxi driver $40 for the fare plus a 10% tip. How much do you pay in all?

8. Suppose you receive $60 for babysitting plus a 20% tip. How much do you receive in all?

FINDING PERCENT INCREASES AND DECREASES

Use sense-making strategies and procedures to find the missing values below.

Amount	% of Change	Amount of Change	Final Amount
1. $100		$10 increase	
2. $50	100% increase		
3. $50			$110
4. $20	10% increase		
5. $20		$1 increase	
6. $20	15.5% increase		
7. $65	27% increase		
8. $60		$30 decrease	
9. $60	25% decrease		
10. $22		$4.40 decrease	
11. $22	5% decrease		
12. $22			$21.78
13. $22	4.5% decrease		
14. $26	14% decrease		

PERCENT PROBLEMS

Use sense-making strategies and procedures to find the missing values below.

Amount	% of Change	Amount of Change	Final Amount
1. $200			$220
2. $70		$70 increase	
3. $40	120% increase		
4. $25	10% decrease		
5. $120		$6 decrease	
6. $73	15.5% increase		
7. $65	27% decrease		

8. A department store is having a sale on jackets. Originally the jackets were selling for $90. After the discount, the jackets cost $60. What is the percent of the discount?

9. The Mangel family had a $144 electricity bill in April and a $132 electricity bill in May. By what percent did their electricity bill decrease from April to May?

10. Stan bought one video game for $20 and another for $30. His total at the register was $53.50. What was the tax rate that Stan paid?

PERCENT PROBLEMS (Continued)

You earn $100 in your first week at a part-time job.

11. Due to excellent work habits, your boss gives you a 10% raise for week two. How much will you earn for week two?	12. Your work suffers, so for week three your boss cuts your pay by 10% from week two. How much will you earn for week three?
13. With a 10% increase, and then a 10% decrease, explain why you are not back to making $100 per week.	

Compute.

14. Find 5% of $20.	15. Find 20% of $5.
16. Explain or show why problems 14 and 15 have the same answers.	

17. You buy a notebook for $6.25, there is 7.5% sales tax. You pay with a $20 bill. How much change should you expect?	18. You buy a notebook for $7.50, there is 6.25% sales tax. You pay with a $20 bill. How much change should you expect?
19. Explain or show why problems 17 and 18 have different answers.	

ESTIMATE AND COMPUTE

1. The price of a car, which is currently $7,891, is increased by 5.1%. Find the increase.

Estimate:	Compute (round to the nearest penny):
Check (using a calculator):	

2. A coat that sells for $290 is marked down 48.3%. Find the discounted price.

Estimate:	Compute:
Check (using a calculator):	

3. Benny's income is taxed at 34.3%. He makes $8,500 this month. How much does he get to keep?

Estimate:	Compute:
Check (using a calculator):	

POSTER PROBLEMS 5

Part 1: Your teacher will divide you into groups.

- Identify members of your group as A, B, C, or D. I am group member _____.
- Each group will start at a numbered poster. Our group start poster is _____.
- Each group will have a different color marker. Our group marker is _____.

Part 2: Answer the problems on posters by following the directions of your teacher.

Part 3: Return to your seats.

Refer to the poster problems. Discuss and answer each question.

1. Compare the estimates to the exact amounts that each person would pay. Do you think the estimates were reasonable?

2. Why is a 6% raise different than a 3% raise followed by another 3% raise?

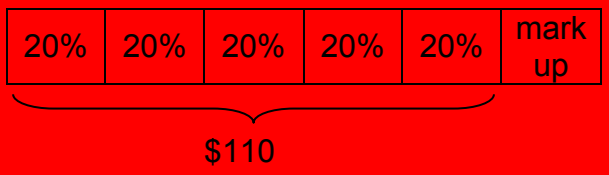
3. Is a 20% discount, followed by an extra 25% discount the same as a 45% discount? Explain.

4. Suppose you want to buy the coach a gift. How much should you charge for the banquet if you do not want the coach to pay, and you want to buy her the gift?

BUYING A SKATEBOARD

1. Hans and Franz each want to buy the "Thriller" skateboard. They each have $100 to buy their own. At Bullseye Department Store, the Thriller sells for $110 now, and the store manager tells them it will be marked up 20% next week. They want to figure out how expensive the skateboard will be.

   Hans started to draw a tape diagram to determine the markup, and Franz set up a proportion. Study their work and then finish what they started to find the new price.

Hans' work:	Franz's work:
 $110	$\frac{\text{before increase}}{\text{after increase}} \rightarrow \frac{\$110}{x} = \frac{100\%}{120\%}$

2. Dieter is skateboard shopping at the same store. He wants to buy the "Citadel" skateboard that currently sells for $140. How much will the Citadel cost after the 20% markup? Use both methods in problem 1 and show all your work.

Hans' method:	Franz's method:

3. Hans and Franz went to a different store and got a pleasant surprise. The Thriller skateboard was marked down 20% to $90. What was the price before the discount? Use both methods in problem 1 and show all your work.

Hans' method:	Franz's method:

SIMPLE INTEREST

Summary

We will learn what interest means, why it is important, and how it is used.

Goals

- Use simple interest vocabulary.
- Solve problems involving loans and simple interest.

Warmup

It is common for a clothing store to buy merchandise from a manufacturer, and then mark up the price by about 100% when selling the item.

1. What does it mean to mark up the price of a pair of jeans by 100%?

2. If a clothing store buys jeans for $25 each, what will be the selling price of these jeans after a 100% markup?

3. When you buy these jeans, you also have to pay a 9% sales tax. What is the total you must pay for these jeans?

SIMPLE INTEREST FORMULA

Interest is an amount charged or paid for the use of money.

1. When you borrow money from a bank (get a loan), why does the bank charge you interest?

2. When you put your money into the bank to save it (make an investment), why does the bank pay you interest?

Match each term to its meaning as it relates to borrowing or investing money.

____ 3. **I**nterest	a. The length of time for which the loan or investment is made. Typically it is the number of years.
____ 4. **P**rincipal	b. The percent paid or charged to use money for each time period. Typically it is the percent paid per year, that is, the percent paid annually.
____ 5. Interest **R**ate	c. An amount paid or charged for the use of money.
____ 6. **T**ime	d. The sum of the principal and the interest.
____ 7. Total **A**mount	e. The initial amount of money borrowed or invested.

Suppose you borrow $50 for two years at an annual rate of 10% simple interest.

8. What is the principal? P = _____ dollars

9. What is the annual rate of interest? R = _____ percent per year

10. How much interest is paid per year? $P \bullet R$ = _____ dollars per year

11. What is the time of the loan? T = _____ years

12. How much total Interest is paid? $I = P \bullet R \bullet T$ = _____ dollars

13. How much is the total Amount repaid for the loan? $P + I$ = _____ dollars

SIMPLE INTEREST FORMULA (Continued)

Suppose you get a loan of $100 from a bank. The bank charges an annual interest rate of 10%. You have 4 years to repay the loan and simple interest.

14. How much will you pay the bank each year in interest? _____

15. How much interest will you have paid the bank in 4 years? _____

16. Use the simple interest formula below to verify your answer to problem 15.

Interest = **P**rincipal • **R**ate • **T**ime $I = P \bullet R \bullet T$ (also written $I = PRT$)

I = _____ • _____ • _____

I = _____

17. What is the total amount of money you will have to pay the bank? _____

18. Use the total amount formula to verify your answer to problem 17.

Total **A**mount = **P**rincipal + **I**nterest $A = P + I$

A = _____ + _____

A = _____

19. You borrow $250 at a 5% annual simple interest rate for 4 years.

a. How much simple interest will you pay?	b. What is the total amount you will repay?
$I = PRT$	$A = P + I$

SIMPLE INTEREST PRACTICE

1. **I**nterest = **P**rincipal • **R**ate • **T**ime OR ____ = ____ • ____ • ____

2. Total **A**mount = **P**rincipal + **I**nterest OR ____ = ____ + ____

Substitute the appropriate values into the formulas to solve each problem below.

3. You invest $500 at a 7% annual simple interest rate for 5 years.

a. How much simple interest will you earn?	b. What is the total amount you will get back?

4. You borrow $4,000 at a 5% annual interest rate and will pay $2,000 in simple interest.

a. For how many years is the loan?	b. What is the total amount you will repay?

5. You invest some money at a 10% annual interest rate. The total amount that you get back is $9,000, which includes $3,000 in interest.

a. How much was the principal?	b. How long was the investment?

SIMPLE INTEREST PRACTICE (Continued)

Substitute the appropriate values into the formulas to solve each problem.

6. You pay 6.5% annual simple interest for 8 years on a loan, and you pay $960 in interest.

a. How much is the principal?	b. What is the total amount you will repay?

7. You invest $1,600 for 3 years and earn $576 in simple interest.

a. What is the annual interest rate?	b. What is the total amount you will get back?

8. You borrow money for 4 years. The total amount that you repay is $7,840, which includes $840 in simple interest.

a. How much was the principal?	b. What was the annual interest rate?

BUYING A CAR

Jonathan has $2,000 saved to buy a new car, and he will get a loan from Grandpa Bob to pay the rest. Grandpa will charge Jonathan simple interest and will work out a payment plan with him. Jonathan would like to purchase a luxury SUV, but will also consider purchasing an economy car.

First determine the total amount of money that Jonathan will need to repay.

	Luxury SUV	**Economy Car**
1. Price	$42,000	$18,000
2. Amount to borrow	$_____	$_____
3. Interest rate	5%	5%
4. Time to repay the loan	6 years	6 years
5. Total interest	$_____	$_____
6. Total amount to repay	$_____	$_____

Grandpa asks Jonathan to pay him back in monthly installments over 6 years.

7. Monthly payment	$_____	$_____

8. If Jonathan has a job that pays $300 per week, will he have enough money to make monthly payments on the SUV? _____ on the economy car? _____

9. Which car do you think Jonathan should choose? In your explanation, discuss other financial considerations you think he should make.

SALES AND COMMISSIONS

Summary

We will solve problems involving sales, sales tax, markups, discounts, and sales commissions.

Goals

- Solve problems involving percent.
- Solve percent problems involving sales commissions.

Warmup

Write each decimal as a percent value.

1. 0.055	2. 1.2

Write each percent value as a decimal.

3. $2\frac{1}{2}\%$	4. 135%

5. How does the "1" in problem 2 compare to the "1" in problem 4?

6. Use the distributive property to multiply 10 times 1.5 by filling in the blanks below.

   10(1.5) = _____(1) + 10(____)

   = _____ + _____

   = _____

7. Multiply 6 times 1.8 using the same procedure as in problem 6.

SALES AND SALES TAX

1. Explain the difference between a sale and a sales tax.

Use any method to calculate the following.

2. The cost of an $8 package of socks on sale for 10% off.

3. The total cost of the socks after paying a 5.5% sales tax on the discounted price.

4. Lauren is buying a $20 shirt. She must pay a 6% sales tax. When computing the total, Lauren does the following:

   20(0.06) = 1.2 → 20 + 1.2 = 21.2 → Lauren's total is $21.20

   Then Chelsea suggests a faster way:

   20(1.06) = 21.2, which agrees with Lauren's total

   a. Explain why Chelsea's quicker calculation works.

   b. Use Chelsea's method to compute the total for a $30 pair of jeans with a sales tax rate of 8%.

5. You are shopping for a new cell phone and have no more than $150 to spend. You find one you like for $139.99, and you know you have to pay 7.5% sales tax. Do you have enough money? Show your process using Chelsea's method to prove your answer.

SALES AND SALES TAX (Continued)

Find the total amount you must pay for the following items at the given tax rates.

6. $25 game; 8% tax

7. $18 book; 7.2% tax

8. Lauren wanted to buy a $140 MP3 player that is on sale for 25% off.

   a. Chelsea said, “My method works for this too. Since I’m taking off 25%, and 1 – 0.25 = 0.75, I only have to pay 75% of the price.” Calculate the sale price according to Chelsea’s method, and then check whether it is correct using another method.

   b. Use any method to calculate the final price with a 6% sales tax on the discounted price.

9. Allie said to Chelsea, “You’re taking off 25%, and then adding 6%. Since 25 – 6 = 19, just take off 19%.” Critique Allie’s reasoning.

10. Jay saved $100 to buy a new power drill he wanted. If he has to pay 8% sales tax, what is the maximum price the drill can be?

STUART'S INCOME

Gross income is the amount of money earned before taxes and other deductions.

Net income is the amount of money earned after taxes and other deductions.

A sales commission is the amount of money, generally a percentage of sales, that a salesperson receives.

1. Stuart's income selling furniture is based entirely on sales commissions. His commission is 2.5% of sales.

   a. If Stuart sells $2,000 worth of merchandise, how much will he earn?

   b. What dollar amount would Stuart have to sell in order to earn $2,000 in commission?

2. Stuart earned $15,000 in gross income. If he paid 28% in taxes, what was his net income?

3. This table shows sales amounts Stuart made for the first three months of the year. Use mathematical expressions and words to explain how to compute his net income for the first three months if he receives a 2.5% commission on sales and then pays 28% in taxes.

January	February	March
$14,000	$3,000	$25,400

PRACTICE

First estimate. Then compute.

1. Value of merchandise sold: $5,040 Sales Commission: 5% Find the gross income. Estimate: Compute: What's the difference between your estimate and the actual gross income? Is this a big difference?	2. Sales commission: 20% Gross income: $225 Find the value of merchandise sold. Estimate: Compute: What's the difference between your estimate and the actual value of the merchandise? Is this a big difference?
3. Value of merchandise sold: $3,500 Gross income: $720 Find the sales commission. Estimate: Compute: What's the difference between your estimate and the actual sales commission? Is this a big difference?	4. Value of merchandise sold: $1,000 Sales commission: 3.5% Taxes on gross income: 8% Find the net income. Estimate: Compute: What's the difference between your estimate and the actual net income? Is this a big difference?

MALIK'S SPENDING MONEY

Malik earns a monthly commission based on her sales for that month. The percent commission for the month is given by the table to the right. For example, if she obtained $25,000 in sales for a month, she would earn a sales commission of 5% of those sales, or

$$\$25{,}000 \times 5\% = \$1{,}250.$$

Malik pays 23% in taxes and then gives 10% of her net earnings to charity.

Suppose Malik sold $25,000 worth of merchandise in April, $32,000 in May, $48,500 in June, and $6,750 in July.

Sales amount in dollars per month	Sales commission
$1 to $10,000	4%
$10,001 to $20,000	4.5%
$20,001 to $30,000	5%
$30,001 to $40,000	5.5%
$40,001 to $50,000	6%
More than $50,000	6.5%

On average, how much does Malik have left to save or spend each month, after taxes and after giving to charity? Show your work and label important components with correct vocabulary (e.g., net income).

SKILL BUILDERS, VOCABULARY, AND REVIEW

SKILL BUILDER 1

Solve each equation using any method.

1. $\frac{n}{6} = \frac{8}{12}$	2. $\frac{10}{50} = \frac{5}{n}$	3. $\frac{10}{n} = \frac{6}{4}$
4. $\frac{15}{3} = \frac{n}{6}$	5. $\frac{n}{12} = \frac{30}{5}$	6. $\frac{5}{8} = \frac{n}{12}$

Solve using any method.

7. If 12 pencils cost $1.68, how much money will you need to purchase 9 pencils?	8. Four fruit smoothies use $2\frac{1}{2}$ cups of bananas. How many cups of bananas are needed for 6 fruit smoothies?
9. Lawrence earned $50 for working 8 hours. At this rate, how much would he earn for working 20 hours?	10. A serving of popcorn is $\frac{3}{4}$ cup. How many servings of popcorn can be made from 5 cups of popcorn?

SKILL BUILDER 2

Fill in each table and make its related graph below. Label and scale the axes appropriately.

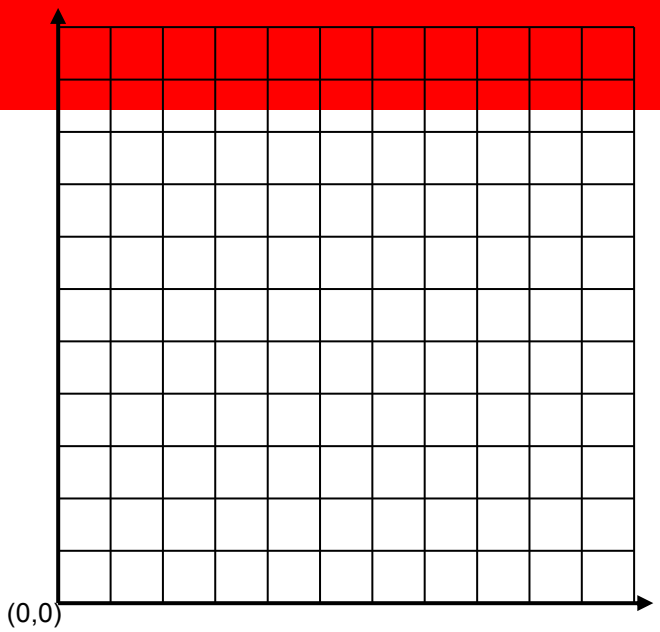
1. Every 5 seconds, Enrique does 6 jumping jacks. Record the time and total number of jumping jacks in the table below.

Time elapsed (Seconds)	0	5	10	15		
Total Number of Jumping Jacks	0					

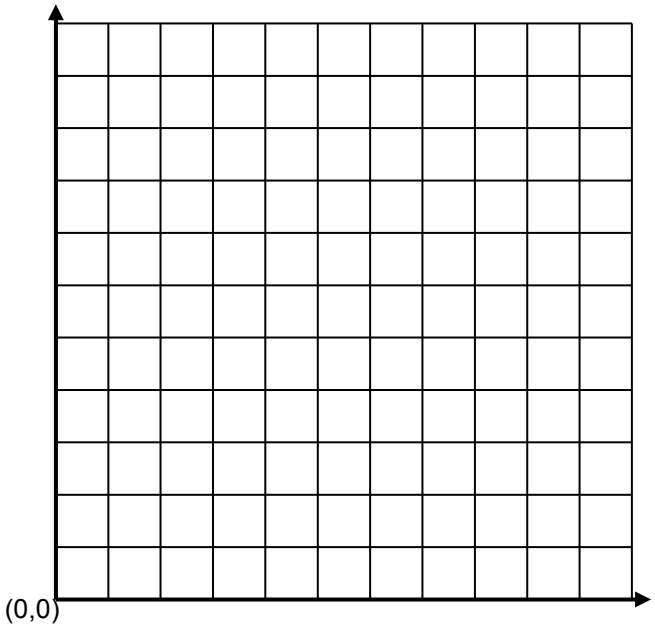
2. Silvia does 6 jumping jacks in 5 seconds, then she rests and does not do any jumping jacks the next 5 seconds, then she does 6 jumping jacks the next 5 seconds, and so on. Record the time and total number of jumping jacks in the table below.

Time elapsed (Seconds)	0	5	10	15		
Total Number of Jumping Jacks	0					

Enrique's data:



Silvia's data:



3. Enrique thinks only his situation illustrates a proportional relationship. Silvia thinks only hers does. Melissa thinks neither does. Alain thinks both do. Explain who you think is correct using the data in the tables and the graphs.

SKILL BUILDER 3

1. Lupe wants to rent a limousine for a trip to the city. The limo costs $700 for the night and $0.15 per mile traveled. She has up to $750 to spend. Write and solve an inequality that represents this scenario to find how many miles the limo can travel.

Write <, =, or > to make a true statement.

2. (-15.23)(2.4) – 13.87 _____ 5.96 – 26.89	3. 4.2(5.6 – 8.63) _____ 2.3 – 5(4.23)
4. $2\frac{5}{6} - 4\frac{1}{3}$ _____ $1\frac{3}{4}\left(-2\frac{3}{5}\right)$	5. $1\frac{4}{9}(6 - 12)$ _____ $3\left(\frac{5}{9} - 2\frac{1}{3}\right)$

6. The temperature in Kansas City was 35°F at kickoff when their football team, the Chiefs, played the Denver Broncos. That same day the temperature in Green Bay was -4°F at kickoff when their football team, the Packers, played the New England Patriots. What is the difference between these temperatures?

7. A recipe calls for $\frac{3}{4}$ cup of sugar or every $3\frac{1}{4}$ cups of flour. Make a double number line to represent this ratio, and use it to find the amount of flour needed for 3 cups of sugar.

SKILL BUILDER 4

1. Simplify the complex fraction below using two different methods.

$$\frac{\frac{5}{8}}{\frac{3}{4}}$$

Compute.

2. $-7(3 - 8) + 5(-6)$

3. $\dfrac{15 - 4(8)}{-15 - 2}$

4. In their neighborhood, Sam and Cesar sold lemonade to raise money for their baseball team. They only had $50 to spend on the supplies for the lemonade. They spent $15 on cups and $0.35 for every cup of lemonade they made. How many cups of lemonade did they make? Explain.

Solve.

5. $3x + 9 = 25$

6. $-18 = 8 - 2x$

7. $\frac{2}{5}n - 1 = -4$

8. $\frac{m}{5} + 0.12 = -6.3$

SKILL BUILDER 5

Solve.

1. A triangle has a perimeter of 30 units. The second side is 3 times the length of the first side. The third side is $5\frac{1}{2}$ units longer than the length of the second side. What is the length of each side?

   a. Define the variables using words or pictures.

   b. Write an equation and solve.

   c. Write the solution in words.

   d. Check the solution.

2. The sum of three consecutive even integers is 264. What is each integer?

   a. Define the variables using words or pictures.

   b. Write an equation and solve.

   c. Write the solution in words.

   d. Check the solution.

SKILL BUILDER 6

Determine each final price after the percent markup or discount. Ignore the shaded boxes.

Price of Item	Percent Markup (or increase)	Percent Discount (or decrease)	Final Price
1. $800		10%	
2. $800	5%		
3. $240		10%	
4. $240	20%		
5. $600		20%	
6. $600	40%		

Estimate first, then compute.

7. Increase $120 by 160% and give the total.

   Estimate:

   Calculate:

8. Original price: $90
   Tax is 4.5%
   Find the total price.

   Estimate:

   Calculate:

9. For problem 8 above, was your estimate high or low? Explain why that happened.

SKILL BUILDER 7

Substitute the appropriate values into the interest formulas below to solve each problem.

1. You pay 3.5% annual simple interest for 12 years on a loan, and you pay $1,512 in interest.

a. How much is the principal?	b. What is the total amount you will repay?

2. You invest $1,420 for 3 years and earn $319.50 in simple interest.

a. What is the annual interest rate?	b. What is the total amount you will get back?

3. You borrow money at a 4.5% annual simple interest rate. The total amount that you repay is $7,350, which includes $1,350 in interest.

a. How much was the principal?	b. For how long did you have the loan?

4. Look at the two situations below. Circle the one that makes the most interest. Show your work.

Situation A:	**Situation B:**
You loan $200 to a friend and receive a 2% annual simple interest. Your friend will pay you back over five years.	You loan $300 to a friend and receive a 3% annual simple interest. Your friend will pay you back over three years.

SKILL BUILDER 8

Estimate first. Then compute.

1. A tip of $15\frac{1}{2}\%$ is added to a restaurant bill of $42. How much tip is this?	2. The cost of a computer tablet is increased by 3.2% from $580. Find the new cost.
3. Pants that sell for $46 are discounted 33%. How much savings is this?	4. Dinner costs $24.70. You leave a 15% tip. How much is the tip?
5. Shelly earns a 5% commission as a shoe salesperson. If her sales for shoes are $1,100 on Monday, $1,025 on Tuesday, and $890 on Wednesday, how much commission did she earn?	6. Determine the total amount to repay a bank for a loan of $3,000 at an annual simple interest rate of 7.2% for 8 years.

7. At a restaurant, Jordyn's bill was $15. She multiplied 15 by 1.2 in order to find her total cost, including a 20% tip. Does this give her the correct amount? Explain.

SKILL BUILDER 9

Estimate first. Then compute.

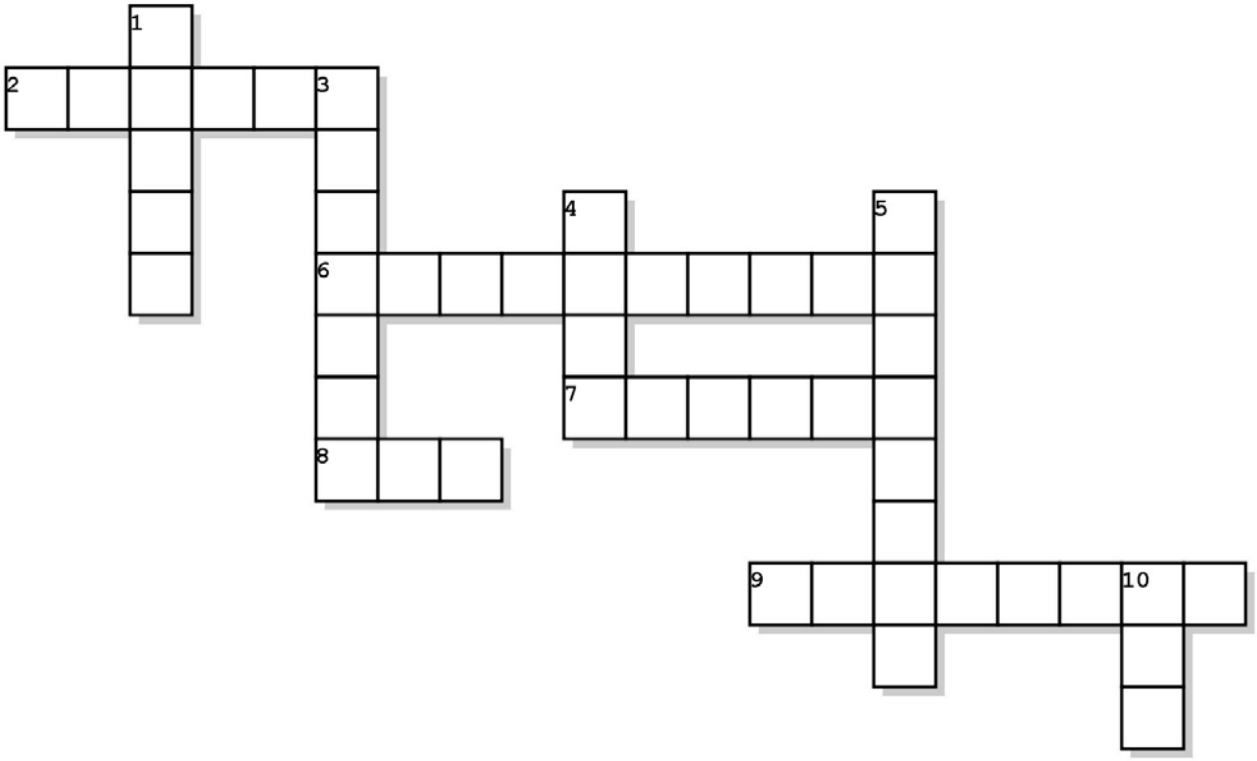
1. Find 130% of $40.	2. On his last test Drew answered 64 questions correctly. This was 80% of the questions. How many questions were on the test?
3. The price of a pair of jeans is $55. The sales tax rate is 9%. What is the total cost of the jeans, including tax?	4. The regular price of a camera is $250. It is on sale for 15% off. What is the discounted sale price?

5. Evelina received a 15% off coupon for a clothing store.

   a. For merchandise with a $90 sticker price, how much does she spend using the coupon (excluding tax)?

   b. If she uses the coupon and only wants to spend $45 (excluding tax), what is the highest possible total sticker price she can purchase?

FOCUS ON VOCABULARY



Across

2 increase in cost of goods or services

6 money earned based on sales

7 $I = PRT$ is the ____ interest formula.

8 money collected by the government

9 markdown

Down

1 income earned before taxes

3 per hundred

4 gratuities

5 money charged or borrow money

10 income earned after taxes or deductions

(For word hints, see the word bank and other vocabulary used in this packet.)

SELECTED RESPONSE

Show your work on a separate sheet of paper and select the best answer(s).

1. A store sells CDs for $12. The owner wants to offer a sale and reduce the cost of all CDs by at least 15%. Which of the following prices could represent the sale price of a CD? Choose all that apply.

   A. $8.00 B. $9.00 C. $10.00 D. $11.00

2. Oscar borrows $3,500 from the bank. The bank will charge him a simple interest rate of 5% per year. How much interest will he have to pay the bank if he repays the loan in one year?

   A. $175 B. $1,750 C. $350 D. $3,675

3. Hilda made $40,000 last year. She wants to receive a raise of at least 10% this year. Choose all the salaries below that would represent a raise of at least 10%.

   A. $36,000 B. $43,000 C. $45,000 D. $50,000

4. What is 0.6% of $80?

   A. $0.48 B. $4.80 C. $48 D. $480

5. What is the total amount to be repaid on a 2 year loan of $20,000 at 10% annual simple interest?

   A. $4,000 B. $20,400 C. $24,000 D. $400,000

6. How much is the final price of an item that is $4.50 with an additional 8% sales tax? (Round the answer to the nearest cent.)

   A. $0.36 B. $4.86 C. $5.30 D. $36.00

7. Jenna earns a 5.5% commission on sales of clothes. She wants to make at least $200 in commission this week. Choose all the following weekly sales totals that will allow Jenna to reach her goal.

   A. $11 B. $110 C. $1,100 D. $4,000

KNOWLEDGE CHECK

Show your work on a separate sheet of paper and write your answers on this page.

12.1 Percent Increase and Decrease

For each beginning amount, find the amount of change and the final amount.

	Beginning amount	% of change	Amount of change	Final Amount
1.	$128	10% increase		
2.	$360	15% decrease		

12.2 Interest

Thi wants to buy a mountain bike that costs $2,300. She has $500 saved, and her brother agrees to lend her the rest, but he will charge a simple interest rate of 7% per year. Thi will repay the loan in 3 years.

3. What is the loan amount she needs?

4. What is the amount of interest she must pay?

5. What is the total amount Thi must repay?

12.3 Sales and Commissions

6. Matt earns a 5% commission on all sports equipment he sells. If he sells $2,000 in sports equipment, how much will he earn?

7. If Matt must pay 10% of his earnings to the government for taxes, what will be his net income?

HOME-SCHOOL CONNECTION

Here are some problems to review with your young mathematician.

1. Determine the final price of a $350 video camera after a 5% markup.

2. Marcus has a loan of $1,200 at 10% per year (simple interest) for 3 years.

   What is the total amount of interest that Marcus must pay?

   What is the total amount of money that Marcus will pay back?

   Francisco thinks that the total amount to be paid back on Marcus's loan is $1,320 because 10% interest on $1,200 is $120 and the sum is $1,320. Explain why Francisco is incorrect.

3. Blakely earned a 20% commission on jewelry that she sold. If she sold $150 in jewelry, how much did she earn?

Parent (or Guardian) Signature_____

COMMON CORE STATE STANDARDS – MATHEMATICS

STANDARDS FOR MATHEMATICAL CONTENT

6.RP.A*	**Understand ratio concepts and use ratio reasoning to solve problems.**
6.RP.3c*	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations: Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.
7.RP.A	**Analyze proportional relationships and use them to solve real-world and mathematical problems.**
7.RP.3	Use proportional relationships to solve multistep ratio and percent problems. *Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.*
7.NS.A	**Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.**
7.NS.3	Solve real-world and mathematical problems involving the four operations with rational numbers.
7.EE.A	**Use properties of operations to generate equivalent expressions.**
7.EE.2	Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. *For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."*
7.EE.B	**Solve real-life and mathematical problems using numerical and algebraic expressions and equations.**
7.EE.3	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. *For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.*

* Review of content essential for success in 7th grade.

STANDARDS FOR MATHEMATICAL PRACTICE

MP1	Make sense of problems and persevere in solving them.
MP2	Reason abstractly and quantitatively.
MP3	Construct viable arguments and critique the reasoning of others.
MP4	Model with mathematics.
MP5	Use appropriate tools strategically.
MP6	Attend to precision.

9 7 8 1 6 1 4 4 5 0 7 1 9