

9.1 Solving Proportions

NOTES

Math 7

Write your
questions here!



Ratio:

Proportion:

How many apples tall are
3 smurfs?

1) Cross Multiply

Ex 2: Mr. Kelly is so good at basketball. He can make 3 out of 8 shots.

Ratio or Proportion

How many shots does he make if he attempts 40 shots?

Ratio or Proportion

How many attempts does he need to make 21 shots?

Ratio or Proportion

Ex 2: Sully can get 5 Reese's Cups for \$2.00.

Ratio or Proportion

How much would it cost for 9 Reese's Cups?

Ratio or Proportion

How many Reese's Cups can he get for \$3.20?

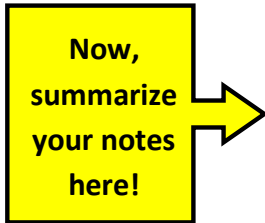
Ratio or Proportion

YOU TRY:

1) Solve the Proportion.

2) Mr. Brust paints 5 seashells in 12 minutes. How many shells can he paint in 60 minutes?

SUMMARY:



9.1 Solving Proportions

PRACTICE

Directions: Solve each proportion.

1)

$$\frac{5}{9} = \frac{x}{36}$$

2)

$$\frac{12}{y} = \frac{48}{20}$$

3)

$$\frac{z}{18} = \frac{8}{15}$$

Directions: Determine whether each situation is a RATIO or a PROPORTION. Set each up. Do not solve.

4) Mr. Sullivan can eat 12 pancakes in 8 minutes. How many pancakes can he eat in 15 minutes?

RATIO OR PROPORTION

5) Mr. Brust shoots paper into his wastebasket. He makes 4 shots for every 5 he attempts.

RATIO OR PROPORTION

6) Mr. Kelly pays \$4.00 for 8 Pez dispensers.

RATIO OR PROPORTION

Directions: Set up a proportion and then solve. Remember to label your answer.

7) Sully wins 2 out of 3 games he plays against Brust. How many games will they play if he wins 12 games?

8) Mr. Kelly guesses right 1 out of every 4 questions he takes on a test. How many questions will he get right if the test has 100 questions?

9) Brust can jump 10 times in 30 seconds on his trampoline.

a. How long will it take for him to jump 35 times?

b. How many jumps will he do in 55 seconds?

10) Sully can run 2 miles in 46 minutes.

a. How long will it take him to run 7 miles?

b. How many miles can he run in 23 minutes?

11) Mr. Kelly knows that one side of his house is 20 feet long and it takes him six strides to walk the same distance. How long is the other side of his house if it takes him 8.5 strides to walk it?

Directions: Set up a proportion and then solve. Remember to label your answer.

1) Goodyear can make 100 Tires in 45 minutes at their factory in Akron, Ohio!

a. How many tires can they make in 135 minutes?

b. How long will it take for them to make 550 tires?

2) The Algebros LOVE eating wings.

Mr. Sullivan can eat 5 buckets of wings in 2 hours. How many wings does Mr. Sullivan eat in 3 hours?

Mr. Kelly can eat 0.625 of a bucket of wings in 0.25 hour. How many wings does Mr. Kelly eat in 4 hours?

Mr. Brust can eat $\frac{3}{4}$ of a bucket of wings in $\frac{3}{10}$ hour. How many wings does Mr. Brust eat in one hour?

Which Algebro can eat the MOST wings in ONE HOUR? Explain how you know.

EXIT TICKET –

If Mr. Brust can bambam 8 jamjams in 12 whamwhams, then how many jamjams can he bambam in 33 whamwhams?

9.2 Percents

NOTES

Math 7

Write your
questions here!



Mr. Brust sleeps 18 of the 24 hours on Saturday. What part of a whole 100% is Mr. Brust sleeping?

$$\frac{\textit{Part}}{\textit{Whole}} = \frac{\textit{Part}}{\textit{Whole}}$$

$$\frac{\textit{Part}}{\textit{Whole}} = \frac{\textit{Part}}{\textit{Whole}}$$

$$\frac{\%}{100} = \frac{\textit{IS}}{\textit{OF}}$$

Ex 1: What is 12% of 54?

Ex 2: What percent of 36 is 52?

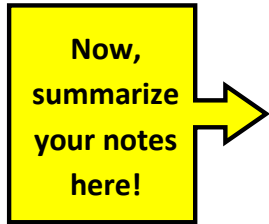
Ex 3: 78 is 45% of what number?

YOU TRY: What percent is 12 of 40?

Ex 4: Sigonella won 10 different European Championships last year which was 62.5% of all possible titles. How many titles were given out last year?

You try! Mr. Sullivan makes \$24,000 a year working at the school. Same say he's overpaid. He pays \$7,700 in taxes. What percent of his income does he pay in taxes?

SUMMARY:



9.2 Percents

PRACTICE

Directions: Set up a proportion and then solve it. Round to the nearest hundredth.

1) What percent of 54 is 40?

2) 68 is 35% of what number?

3) 168% of 80 is what?

4) 88 is what percent of 105?

5) What is 15% of 90?

6) 40 is 150% of what number?

Directions: Set up a proportion for the following. Then solve your proportion. Round to the nearest hundredth.

7) Before going home for the weekend Mr. Brust grades 50 of the 65 math tests. What percent of the tests did he grade before going home?

Directions: Set up a proportion for the following. Then solve your proportion. Round to the nearest hundredth.

8) Bean is a 45% free throw shooter. About how many free throws did he take if he made 9 in the game?

9) Sully wants to buy the latest iPhone for \$1199. He knows that he'll have to pay 6% sales tax on the phone. How much tax will he pay?

10) Mr. Kelly is really good at guessing on multiple choice tests. He can generally guess with 35% accuracy. How many questions will he get right if there are 60 questions on the test?

9.2 Percents

WRAP UP

Directions: Set up a proportion and then solve it. Round to the nearest hundredth.

1) 115% of 80 is what number?

Directions: Set up a proportion for the following. Then solve your proportion. Round to the nearest hundredth.

2) A construction crew has 40 members on it. One day 28 members showed up. What percent of the crew was present?

HOW MUCH DO YOU REALLY PAY?

3) Mr. Sullivan is visiting family in Ohio during the summer and he decides to buy a new pair Beats Solo Pro headphones for \$299.95. Ohio charges 5.75% sales tax on items. How much will he actually pay?

a) First: What is 5.75% of \$299.95?

b) Fill in the boxes to determine how much he pays.

$$\boxed{} + \boxed{} = \boxed{}$$

Original Price Amount of Tax Paid Total Price

4) Mr. Kelly only buys when there is a sale. He finds the same headphones Mr. Sullivan buys on Amazon (no tax) when it was on sale for 22% off.

a) First: What is 22% of \$299.95?

b) Fill in the boxes to determine how much he pays.

$$\boxed{} - \boxed{} = \boxed{}$$

Original Price Amount of Sale Total Price

EXIT TICKET –

How much did Mr. Brust for his car if he paid \$14,500 but got it on sale for 15% off?

9.3 Discounts and Markups

Math 7

Write your questions here!



Ex 1: Mr. Sullivan buys a Michael Jordan rookie card that costs \$300 during a 15% off sale. How much does he pay for the card?

$$\boxed{} - \boxed{} = \boxed{}$$

Original Price Amount of Sale Total Price

Brust goes to the store and spends \$35 on groceries. Tax at the store is 6%. What is the total price of his groceries?

$$\boxed{} + \boxed{} = \boxed{}$$

Original Price Amount of Tax Paid Total Price

Ex 3: Mr. Kelly is a savvy investor. A year ago he invested \$4500 in Tesla stock. After one year the value of the stock went up 125%. How much money did the stock go up by?

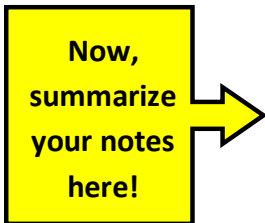
How much money does he have invested in total?

Ex 4: Brust sells his favorite jean jacket to Mr. Bean for 35% off. He told him the jacket originally cost \$45. How much did he sell it to Mr. Bean for?

You try!

Sully is so smart...he waits to buy the new iPhone 24 until its on sale for 20% off. How much will he pay if the store is selling it for \$3800?

SUMMARY:



9.3 Discounts and Markups

PRACTICE

Solve the following. SHOW ALL WORK!!!! Round to the nearest hundredth.

1) The Algebros eat out at their favorite restaurant, BIG EMMAS! The bill is \$68.78 and they give 18% in their tip. How much did they pay in total?

2) Diana Prince is decorating her home. She buys a brand new couch at Ikea for \$600 that is 40% off. How much does she save on her purchase?

Solve the following. SHOW ALL WORK!!!! Round to the nearest hundredth.

3) Mr. Sullivan buys hamburgers for \$0.50 at the store and plans to grill and sell them at the Softball tournament. He plans on marking them up 250%. How much will he be selling them for.

4) Richie Rich has \$1,000,000 invested in Tesla stock. After one year the stock grew 68%. How much is Richie Rich's stock now worth?

5) A normal pizza has 1800 calories. Pizza Pizza Pizza makes a lite pizza with 30% less calories. How many calories is Pizza Pizza Pizza's lite pizza?

6) Alfred tells Bruce Wayne that he needs to cut his Batman Budget by 18%. If Bruce Wayne had been spending \$4,000,000 a year on Batman, how much money did Batman cut from the budget?

7) Mr. Kelly is a smart shopper. He went and bought a brand new car while he was on sale for 30%. The car originally costs \$28,500. How much money did he save?

8) The Cleveland Cavaliers won 24 games last year. Their goal is to win 25% more games this year. How many games do they need to win this year for their goal to be true?

Solve the following. SHOW ALL WORK!!!!

- 1) Mr. Brust goes to the store. He buys some groceries for \$136.52 and then pays the 5% tax on top of it. What is his total bill?
- 2) a. Brust has just started to invest money. He puts \$500 into a new E-bike company called "No Pedal Biking". His first year he loses 25% of investment. How much money does he have still invested after one year?
- b. The next year "No Pedal Biking" does great! Brust earns 25% of his investment back (the amount you found in part a). How much money does Brust have at the end of this year invested?
- c. What do you notice? What's strange? Why do you think this is true?

EXIT TICKET –

Mr. Sullivan loves tacos! For his birthday he gets a coupon for 20% off tacos. He goes to his favorite restaurant and orders \$ x worth of wonderful tacos.

Select ALL POSSIBLE answers that correctly model the total price for how much Mr. Sullivan pays for tacos.

- a. $x + 0.20x$ c. $x + 0.20$ e. $1.20x$
- b. $x - 0.20x$ d. $x - 0.20$ f. $0.80x$

9.4 Percent Change

NOTES

Math 7

Write your
questions here!



Ex 1: Brust is super strong. His original lift was 50 pounds, but now he can lift 70 pounds! Describe the change in lift.

Original:
New:

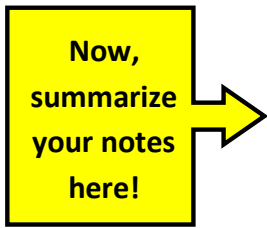
Original:
New:

Ex 2: Kaiserslautern High School had 630 students to start the year. By the end of the year they had 580 students. Describe the change in population.

Ex 3: Kamiko scores 12 points in her first basketball game of the season. In her second game she scores 25 points. Describe the change in points scored.

You try: Mr. Kelly has had some varying degrees of craziness over the years. Santa Kelly had a score of 74.5 on the crazy scale but Pirate Kelly had a score of 122.4! Describe the change in his craziness score.

SUMMARY:



9.4 Percent Change

PRACTICE

Find the percent change. Label as increase or decrease. SHOW ALL WORK!!!

1)
Original: 34
New: 52

2)
Original: 97
New: 78

3)
Original: 134
New: 187

Find the percent change. Label as increase or decrease. SHOW ALL WORK!!!

4) Mr. Kelly bought the car of his dreams! He purchased a brand new Tesla for \$85,000! However, cars depreciate in value as soon as they are driven off the lot. When he gets home and realizes that he no longer wants the car he can only sell it for \$72,000. Describe the percent change in value of his Tesla.

5) Jumbo jets can currently carry about 600 people on Transatlantic flights. It is predicted that by 2040 planes will be able to carry up to 1400 people on flights. Describe the percent change in the number of passengers on a flight.

6a) Mr. Sullivan weighed 210 pounds before the start of the pandemic. By the end of the pandemic he weighed 235 pounds. Describe the percent change in his weight during the pandemic.

6b) After six months of working out Mr. Sullivan went from his 235 pounds back to his pre-pandemic weight of 210 pounds. Describe the percent change in his weight.

7a) Amazon normally sells the new Apple Airpod Pro Plus Limited Edition Earpods for \$400. However, they are on sale for \$250. Describe the percent change in price.

7b) Mr. Kelly bought a pair of the Earpods at the sale price of \$250. He sold them to Mr. Brust for \$400. Describe the percent change in price that Mr. Kelly sold the Earpods for.

8) Last season the Ohio State women's basketball team won 13 games. This year they won 25! Describe the present change in wins for the Ohio State women's basketball team.

1) Last year there were a total of 27 students who had a D or an F in Mr. Brust's classes. This year there are only 5 who have a D or an F. Describe the percent change of students with Ds or Fs in Mr. Brust's class from one year to the next.

2) The Algebros open up an electronics store. They had a massive sale one July. They took \$75 off any purchase over \$450. At the same time the store gave a 20% off sale. The 20% discount is taken after the \$75 is taken off. What is the price of a television that originally costs \$2500 after both discounts.

3) At the Alg-Electronics store, the total sales for November was \$113,500. The total sales for December was \$144,000. What is the percent increase in sales from November to December?

EXIT TICKET –

Mr. Brust and Mr. Bean had a weight loss competition. Mr. Brust started at 210 pounds and ended up at 185 pounds. Mr. Bean started at 150 and ended at 130.5 pounds.

Construct a viable argument on who did better at the weight loss challenge.

Unit 9 Review: Proportions

NAME: _____

Period: _____

Directions: Solve each proportion.	Directions: Set up a proportion and then solve. Remember to label your answer.
1) $\frac{6}{15} = \frac{27}{x}$	2) Mr. Brust makes 15 mistakes when making every 2 units. How many mistakes can we expect that he'll make if he made 11 units?
Directions: Set up a proportion and then solve it. Round to the nearest hundredth.	Directions: Set up a proportion for the following. Then solve your proportion. Round to the nearest hundredth
3) 68 is 30% of what number?	4) Mr. Kelly has 4 open seats in his classroom. This is 16% of all of his seats.
Solve the following. SHOW ALL WORK!!!! Round to the nearest hundredth.	
5) Mr. Bean recently purchased a 2 nd Generation iPad. It originally cost \$450 but he got it on sale or 30% off. How much did he pay for the iPad?	

Directions: Find the percent change. Label as increase or decrease.

6)
Original: 320
New: 345

7) The fox population last season was 525 foxes in a region. The next season the population was 1200 foxes. Describe the change in population of foxes from one season to the next.

8a) Mr. Sullivan invests \$1000 in SpaceX. In one year his investment went up to \$1250. Describe the change in investment from one year to the next.

8b) The next year his SpaceX investment decreases 25% from his \$1250. How much does he now have invested?