"I know what we're going to do today."

Agenda:

1) Bell Ringer: PS #3

2) Go over lesson 8 with 11:00 buddy

3) Ratios and Proportions Lesson 9: multi step ratio problem

4) Homework: Lesson 9

5) Problem set 4 due Friday 10/6

Parallel lines have so much in common...

it's a shame that they'll never meet.

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Problem Set

1. Students in 6 classes, displayed below, ate the same ratio of cheese pizza slices to pepperoni pizza slices. Complete the following table, which represents the number of slices of pizza students in each class ate.

Slices of Cheese Pizza	Slices of Pepperoni Pizza	Total Pizza
2	5	7
6	15	21
8	20	28
$5\frac{1}{2}$	$13\frac{3}{4}$	$19\frac{1}{4}$
$3\frac{1}{3}$	$8\frac{1}{3}$	$11\frac{2}{3}$
$\frac{3}{5}$	$1\frac{1}{2}$	$2\frac{1}{10}$

15 ÷ 6 = 2.5

21 ÷ 15 = 1.4

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2. To make green paint, students mixed yellow paint with blue paint. The table below shows how many yellow and blue drops from a dropper several students used to make the same shade of green paint.

a. Complete the table.

Yellow (Y) (ml)	Blue (B) (ml)	Total
3 ½	5 ¼	8 ¾
2	3	5
	6 ¾	
6 ½		

$8\frac{3}{4} \div 5\frac{1}{4} = 1\frac{2}{3}$

b. Write an equation to represent the relationship between the amount of yellow paint and blue paint.

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3.

a. Complete the following table

Distance Ran (miles)	Distance Biked (miles)	Total Amount of Exercise (miles)
		6
$3\frac{1}{2}$	7	
	$5\frac{1}{2}$	
$2\frac{1}{8}$		
	$3\frac{1}{3}$	

b. What is the relationship between distances biked and distances ran?

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4. The following table shows the number of cups of milk and flour that are needed to make biscuits. Complete the table.

Milk (cups)	Flour (cups)	Total (cups)
7.5	9	16.5
8 3/4	10.5	19.25
12.5	15	27.5
5	6	11

1.20 or $1\frac{1}{5}$

$27\frac{1}{2} \div 15 =$

$\frac{55}{2} \div 15$

$\frac{55}{2} \times \frac{1}{15} = \frac{11}{6} = 1\frac{5}{6}$

1.83

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Lesson 9: Multistep Ratio Problems

Classwork

Example 1: Bargains

A retail clothing store advertises the following sale: Shirts are $\frac{1}{2}$ off the original price; pants are $\frac{1}{3}$ off the original price, and shoes are $\frac{1}{4}$ off the original price (called the discount rate).

a. If a pair of shoes cost $40 and is advertised at $\frac{1}{4}$ off the original price, what is the sales price?

$40

whole $- \frac{1}{4} = \frac{3}{4}$

$\frac{10}{\cancel{40}} \times \frac{3}{4} = \$30$

$y = \frac{3}{4}x$

Method 2

$\cancel{40} \times \frac{1}{4} = \$10$ Discount

$40 - 10 = \$30$ sale price

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b. At Peter's Pants Palace a pair of pants that usually sell for $33.00. If Peter advertises that the store is having $\frac{1}{3}$ off sale, what is the sale price of Peter's pants?

whole − Discount Rate

$1 - \frac{1}{3} = \frac{2}{3}$

$y = \frac{2}{3}x$

$33 \times \frac{2}{3} = \$22$

sale price $= \frac{2}{3}$(orig. price)

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off = subtract

of = multiply

Example 2: Big Al's Used Cars

A used car sales person receives a commission of $\frac{1}{12}$ of the sales price of the car on each car he sells. What would the sales commission be on a car that sold for $21,999?

$\frac{1}{12}$ is the Rate

$y = \frac{1}{12}x$

Commission $= \frac{1}{12}$(sales)

Commission $= \frac{1}{12}(21{,}999)$

Commission $= \$1833.25$

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Example 3: Tax Time

As part of a marketing ploy, some businesses mark up their prices before they advertise a sales event. Some companies use this practice as a way to entice customers into the store without sacrificing their profits.

A furniture store wants to host a sales event to improve their profit margin and to reduce their tax liability before their inventory is taxed at the end of the year.

How much profit will the business make on the sale of a couch that is marked-up by $\frac{1}{3}$ and then sold at a $\frac{1}{5}$ off discount if the original price is $2400?

whole + $\frac{1}{3}$ = $1\frac{1}{3}$

(1)

$1\frac{1}{3} - \frac{1}{5}$ Rate

$1\frac{5}{15} - \frac{3}{15} = 1\frac{2}{15}$

$y = 1\frac{2}{15}x$

$y = 1\frac{2}{15}(2400)$

$y = \$2720$

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Example 4: Born to Ride

A motorcycle dealer paid a certain price for a motorcycle and marked it up by $\frac{1}{5}$ of the price he paid. Later he sold it for $14,000 what is the original price?

whole + markup

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

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

$14000 = 1\frac{1}{5}x$

$14000 \div 1\frac{1}{5} = \$11666.66$

orig. price	marked up price
?	14000
$11666.66	$1\frac{1}{5}$

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Lesson Summary:

- Discount price = original price – rate × original price OR (1 - rate) × original price
- Commission = rate × total sales amount
- Markup price = original price + rate × original price OR (1 + rate) × original price

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1. What is $\frac{1}{32}$ commission of sales totaling $24,000?

2. DeMarkus says that a store overcharged him on the price of the video game he bought. He thought that the price was marked $\frac{1}{4}$ **of** the original price, but it was really $\frac{1}{4}$ **off** the original price. He misread the advertisement. If the original price of the game was $48, then what was the difference between the price that DeMarkus thought he should pay and the price that the store charged him?

3. What is the cost of a $1200 washing machine that was on sale for a $\frac{1}{5}$ discount?

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4. If a store advertised a sale that gave customers a $\frac{1}{4}$ discount, what is the fraction part of the original price that the customer will pay?

5. Mark bought an electronic tablet on sale for $\frac{1}{4}$ off its original price of $825.00. He also wanted to use a coupon for a $\frac{1}{5}$ off the sales price. Before taxes, how much did Mark pay for the tablet?

6. A car dealer paid a certain price for a car and marked it up by $\frac{7}{5}$ of the price he paid. Later he sold it for $24,000 what is the original price?

7. Joanna ran a mile in physical education class. After resting for one hour, her heart rate was 60 beats per minute. If her heart rate decreased by $\frac{2}{5}$, what was her heart rate immediately after she ran the mile?

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1. Jim wants to buy an IPod Nano that costs $150. The store is having a sale for 1/5 off. If he has $125 in his wallet, does he have enough to make this purchase? Justify your answer. (Show each step.)

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What do you notice?

3/10 **off** of a $20 item	7/10 **of** a $20 item

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What operation is represented by the word "off"?

What operation is represented by the word "of"?

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2. Frank paid $42 for a new pair of sneakers. This price was 7/10 of the original price. What was the original price of the sneakers?

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3. Karrie paid $120 for a tablet. She purchased this because it was on sale for 2/5 of the original price. What was the original price of the tablet?

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4. A computer is on sale for 3/5 of its original price. Erica has a coupon for an additional 1/10 discount on the sale price. If the computer has an original price of $250 dollars, what will the price be before tax?

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5. Appliances at Discount City Store are on sale for 8/10 of the original price. Eli has a coupon for an 1/5 discount on the sale price. If the original price of a microwave oven is $500, how much will Eli pay for the oven before tax?

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6. At a discount furniture store, Chris offered a salesperson $600 for a couch and a chair. The offer includes the 1/10 sales tax. If the salesperson accepts the offer, what would be the price of the furniture, to the *nearest dollar*, before tax?

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Homework

1) Part 1: Sue went to Macy's and bought a jacket that was originally priced at $129.99. Sue had a coupon for 1/3 off. What was the sale price of the jacket after the discount?

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Part 2: What was the total price of the jacket after the 1/10 tax was added?

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2) Jim is a car salesman and eams a 1/50 commission on each car that he sells. On Saturday Jim sold a car for $22,500. What was Jim's commission?

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3) Part 1: Jon's Sporting Goods marks items up by 7/10. If Jon's Sporting Good buys kayaks for $150, what is the selling price of the kayaks?

Part 2: If I went into Jon's Sporting Goods to buy a kayak and had a coupon for 1/10 off, how much would I pay for the kayak?

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