

## Lesson 6: Solving Problems by Finding Equivalent Ratios

## Classwork

## Exercises

1. The Business Direct Hotel caters to people who travel for different types of business trips. On Saturday night there is not a lot of business travel, so the ratio of the number of occupied rooms to the number of unoccupied rooms is 2:5. However, on Sunday night the ratio of the number of occupied rooms to the number of unoccupied rooms is 6:1 due to the number of business people attending a large conference in the area. If the Business Direct Hotel has 432 occupied rooms on Sunday night, how many unoccupied rooms does it have on Saturday night?

Saturday: 2:5

Occupied Rooms

72	72
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Unoccupied Rooms

72	72	72	72	72
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$$72 \cdot 5 = 360$$

There were 360 unoccupied rooms on Saturday night.

Sunday: 6:1

Occupied Rooms

72	72	72	72	72	72
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 = 432

$$\frac{432}{6} = 72$$

Unoccupied Rooms

72
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2. Peter is trying to work out by completing sit-ups and push-ups in order to gain muscle mass. Originally, Peter was completing five sit-ups for every three push-ups, but then he injured his shoulder. After the injury, Peter completed the same number of repetitions as he did before his injury, but he completed seven sit-ups for every one push-up. During a training session after his injury, Peter completed eight push-ups. How many push-ups was Peter completing before his injury?

Originally 5:3  
S P

S = Situps

P = Pushups

S = 

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P = 

8	8	8
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$$8 \cdot 3 = 24$$

After Surgery 7:1  
S PS = 

--	--	--	--	--	--	--

P = 

8
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Peter is completing 24 pushups before his injury.

3. Tom and Rob are brothers who like to make bets about the outcomes of different contests between them. Before the last bet, the ratio of the amount of Tom's money to the amount of Rob's money was 4:7. Rob lost the latest competition, and now the ratio of the amount of Tom's money to the amount of Rob's money is 8:3. If Rob had \$280 before the last competition, how much does Rob have now that he lost the bet?

Before Last Bet: 4:7

After Last Bet: 8:3

T = Tom  
R = Rob

T: 

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T: 

--	--	--	--	--	--	--	--

R: 

40	40	40	40	40	40	40
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 = 280

R: 

40	40	40
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$$\frac{280}{7} = 40$$

$$40 \cdot 3 = 120$$

Rob has \$120.00

4. A sporting goods store ordered new bikes and scooters. For every 3 bikes ordered, 4 scooters were ordered. However, bikes were way more popular than scooters, so the store changed its next order. The new ratio of the number of bikes ordered to the number of scooters ordered was 5:2. If the same amount of sporting equipment was ordered in both orders and 64 scooters were ordered originally, how many bikes were ordered as part of the new order?

B = Bikes  
S = Scooters

Original: 3:4

Changed order: 5:2

B: 

16	16	16
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 =

B: 

16	16	16	16	16
----	----	----	----	----

 = 80

S: 

16	16	16	16
----	----	----	----

 = 64

S: 

16	16
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$$\frac{64}{4} = 16$$

$$16 \cdot 5 = 80$$

80 bikes were ordered as part of the new order.

5. At the beginning of Grade 6, the ratio of the number of advanced math students to the number of regular math students was 3:8. However, after taking placement tests, students were moved around changing the ratio of the number of advanced math students to the number of regular math students to 4:7. How many students started in regular math and advanced math if there were 92 students in advanced math after the placement tests?

A: Adv. math  
M: Regular Math

Beginning: 3:8

Placement Tests 4:7

A: 

23	23	23
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A: 

23	23	23	23
----	----	----	----

 = 92

M: 

23	23	23	23	23	23	23	23
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M: 

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$$A: 23 \cdot 3 = 69$$

$$M: 23 \cdot 8 = 184$$

$$\frac{92}{4} = 23$$

There were 69 students in Advanced Math & 184 students in Regular math before placement tests.

6. During first semester, the ratio of the number of students in art class to the number of students in gym class was 2:7. However, the art classes were really small, and the gym classes were large, so the principal changed students' classes for second semester. In second semester, the ratio of the number of students in art class to the number of students in gym class was 5:4. If 75 students were in art class second semester, how many were in art class and gym class first semester?

A = Art  
G = Gym

1st Semester: 2:7

A:  $\boxed{15 \mid 15}$

G:  $\boxed{15 \mid 15 \mid 15 \mid 15 \mid 15 \mid 15}$

A:  $15 \cdot 2 = 30$  Students

G:  $15 \cdot 7 = 105$  Students

2nd Semester: 5:4

A:  $\boxed{15 \mid 15 \mid 15 \mid 15 \mid 15} = 75$

G:  $\boxed{\phantom{15} \mid \phantom{15} \mid \phantom{15} \mid \phantom{15}}$

$\frac{75}{5} = 15$

7. There were 30 students in art class & 105 students in Gym class 1st Semester. Jeanette wants to save money, but she has not been good at it in the past. The ratio of the amount of money in Jeanette's savings account to the amount of money in her checking account was 1:6. Because Jeanette is trying to get better at saving money, she moves some money out of her checking account and into her savings account. Now, the ratio of the amount of money in her savings account to the amount of money in her checking account is 4:3. If Jeanette had \$936 in her checking account before moving money, how much money does Jeanette have in each account after moving money?

Jeanette's Beginning Account 1:6

S = Savings Account:

S =  $\boxed{\phantom{156}}$

C = Checking Account:

C =  $\boxed{156 \mid 156 \mid 156 \mid 156 \mid 156 \mid 156} = 936$

$\frac{936}{6} = 156$

Later Account 4:3

S =  $\boxed{156 \mid 156 \mid 156 \mid 156}$

C =  $\boxed{156 \mid 156 \mid 156}$

S =  $156 \cdot 4 = \$624$

$156 \cdot 3 = \$468$

Jeanette has \$624 in her Savings Account & \$468 in her checking account after moving money.