Sec 5.6/5.7 – Equivalent Ratios and Comparing Ratios

1. **Equivalent Ratios**

   Equivalent ratios have the same value if we can __multiply__ or __divide__ every term in the ratio by the __same__ number.

   We can show this with the terms of the ratios in rows.

   $1 : 1.5$

   $2 : 3$

   $4 : 6$

   SAME!

×2	×2				
1	2	4	8	16	32	64
1.5	3	6	12	24	48	96

   ×2 ×2

   We can show this with the terms of the ratios in columns.

   $1 : 1.5$

   $2 : 3$

   $4 : 6$

   $8 : 12$

   $16 : 24$

   $32 : 48$

   $64 : 96$

   $2 : 3 \quad 4 : 6$

   $$\frac{2}{3} = \frac{4}{6}$$

   equivalent fractions.

   "2 to 3"

   $2 : 3$

   A ratio will be in simplest form when its terms have __no common factor__. $\frac{1}{2}$ $\frac{4}{8}$ $1 : 2$

   simplest

Practice

In Ms. Lo's classes 60 people have the flu, 20 are recovering, and 12 are immune. Assuming that the rest of the school is equally susceptible to the flu, give 3 equivalent ratios of people with the flu, recovering and immune.

part to part ratio

$60 : 20 : 12$
$30 : 10 : 6$ } equivalent ratios!
$15 : 5 : 3$

2. Comparing Ratios

Example – Ali Oop scored 10 free throws in 18 shots. Steve Nash scored 14 free throws and missed 10. Which player has the better free throw record?

There are 3 different strategies of showing thinking for this problem and to compare ratios:

1) Use equivalent part-to-part ratios to find one common term.

Scored shots : missed shots.

Ali Oop:	10 : 8	2.5 : 2
Steve Nash:	14 : 10	2.8 : 2

2.8 is Bigger. ∴ Steve Nash did better.

100 : 80
Steve did better → 112 : 80

2) Use equivalent part-to-whole ratios to find one common term.

Scored shot : total shots.

Ali Oop: 10 : 18   3.33 : 6 ⎤
Steve Nash: 14 : 24   3.5 : 6 ⎦ common factor!

Steve Nash did better!

3) Compare using unit ratios - a ratio where one of the values is equal to **One** .

Vocab:
- Equivalent ratios
- Equivalent fractions
- Unit ratios

Ali Oop: 10 : 18 $\frac{10}{18} \sim 56\%$ ✓

Steve Nash: 14 : 24 $\frac{14}{24} \sim 58\%$ ✓

Steve Nash did better → 0.55 : 1 ⎤
                        0.58 : 1 ⎦ unit ratio!

Practice

1) Show if the following ratios are equivalent:

   a) 16:30 and 28:42   b) 12:9 and 44:33

   lets use a common term.

   16:30   28:42

   3.2:6   4:6   No they are not!

   lets use unit ratios.

   12:9   44:33

   1.33:1   1.33:1

   Yes they are!

2) You are painting your room, and can't decide between two shades of green. Option A is made by mixing 5 cans of green paint with 3 cans of white paint. Option B is made by mixing 7 cans of green paint with 4 cans of white paint. Which option is the lighter shade of green? Choose one of the method from above to show your work.

   green:white

   Option A: 5:3   20:12
   Option B: 7:4   21:12   common term.

   let's use common ratios!
         (common term).

   So A is the lighter shade of green.

3) You have 2 recipes for chocolate chip cookies. Recipe A has 12 cups of batter per 2 cups of chocolate chips. Recipe B has 30 cups of batter per 3 cups of chocolate chips. Which recipe will make more chocolaty cookies? Choose one of the method from above to show your work.

   Recipe A: 2:12

   chocolate:batter   Recipe B: 3:30

   let's use common ratios / common term.

   Using unit ratios: 1:6 ← more chocolately!
       0.16:1 ←
       0.1:1 $\frac{3}{5}$:6