5.7 Comparing Ratios – Notes

Investigation: Recipes A for punch calls for 2 cans of concentrate and 3 cans of water.
Recipes B for punch calls for 3 cans of concentrate and 4 cans of water.

In which recipe is the punch stronger?
Or, are the drinks the same strength?

Recipe A

concentrate : water

2 : 3 → ×2 → 4 : 6 → ×3 → 6 : 9 → ×4 → 8 : 12

Recipe B

concentrate : water

3 : 4 → ×2 → 6 : 8 → ×3 → 9 : 12

Recipe B is stronger since it uses more cans of concentrate for the same amount of water as Recipe A.

Example (1): Which coffee is stronger?

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Erica makes her coffee with
2 scoops of coffee to 5 cups of water.

Erica

Coffee : water

2 : 5 → ×3 → 6 : 15

Jim makes his coffee with
3 scoops of coffee to 7 cups of water.

Jim

Coffee : water

3 : 7 → ×2 → 6 : 14

Jim's coffee is stronger. He uses less water for the same amount of coffee as Erica

2 : 5 → ×7 → 14 : 35

3 : 7 → ×5 → 15 : 35

Jim's is stronger because he use more coffee for the same amount of water.

Example (2): The recommended seeding on a package of grass seed is 200g per 9 m^2. Carey spread 150 g over 6.5 m^2.
Is this more than, equal to, or less than the recommended seeding?

Recommended

g : m^2

200 : 9

22.$\bar{2}$: 1 ÷9 ÷9

Carey

g : m^2

150 : 6.5 ÷6.5 ÷6.5

23.08 : 1

Carey uses more than the recommended amount.

x3 (200 : 9 / 600 : 27) x3

x4 (150 : 6.5 / 600 : 26) x4

Example (3): Write each part-to-part ratio as a part-to-whole ratio, then as a fraction and percent. Which part-to-whole ratio is greater?

i) 2:3

2 : (2+3)

2 : 5 ← part-to-whole

$\frac{2}{5}$

0.4

40%

✱ Only p-to-w ratios can be written as fractions and percents.

ii) 4:3

4 : (4+3)

4 : 7

$\frac{4}{7}$ top ÷ bottom

0.5714 x100

57.14%

Example (4): A contractor brought 2 shades of yellow paint for his clients to see.
Shade 1 is made by mixing 5 cans of yellow paint with 3 cans of white paint.
Shade 2 is made by mixing 7 cans of yellow paint with 4 cans of white paint.
The clients want the lighter shade.
Which shade should they choose?
What assumptions do you make?

Shade 1

yellow : white

$\times 4 \left(5 : 3 \right) \times 4$

$20 : 12$

Shade 1 is lighter
Since it uses less yellow for the same amount of white.

Shade 2

yellow : white

$\times 3 \left(7 : 4 \right) \times 3$

$21 : 12$

$\div 3 \left(5 : 3 \right) \div 3$

$1.\overline{6} : 1$

$\div 4 \left(7 : 4 \right) \div 4$

$1.75 : 1$