

Session 2.1

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Recap of last week

- Adding fractions together
 - Convert them to the **common denominator**
 - Add the numerators together and keep the denominator the same
- Multiplying fractions together
 - Multiply straight — numerator with numerator and denominator with denominator
 - Cancel out or simplify with a denominator
- Dividing fractions by fractions with the *“keep-change-flip”* method
 - Keep the first fraction the same, change \div to \times , and flip the second fraction
 - This converts the division problem into a multiplication problem
- Convert between fractions and decimals
 - Fraction to decimals: divide through
 - Decimals to fraction: write it over a power of 10, then simplify/reduce it
 - Use relationships you already know ($0.375 = \frac{2}{2} * 0.375 = \frac{1}{2} * 0.75 = \frac{1}{2} * \frac{3}{4} = \frac{3}{8}$)
- Memorize a couple of standard fractions

(a) $\frac{1}{2} = 0.5$

(e) $\frac{1}{6} = 0.1\bar{6}$

(b) $\frac{1}{4} = 0.25$

(f) $\frac{1}{9} = 0.\bar{1}$

(c) $\frac{1}{8} = 0.125$

(d) $\frac{1}{3} = 0.\bar{3}$

(g) $\frac{1}{11} = 0.\overline{09}$

Main problems

1. Divide the following fractions

(a) $2 \div \frac{1}{6}$

(d) $\frac{5}{6} \div \frac{3}{6}$

(b) $\frac{14}{15} \div 7$

(e) $\frac{4}{11} \div \frac{8}{11}$

(c) $\frac{1}{3} \div \frac{3}{4}$

(f) $\frac{9}{10} \div \frac{6}{5}$

2. Convert the following decimals into fractions and simplify them

- (a) $0.\overline{6}$ (c) 0.875
(b) $0.\overline{2}$ (d) $0.8\overline{3}$

3. Complete the following ratio problems

- (a) 1 : 5 as 8 : ? (c) 6 : 18 as 7 : ?
(b) 11 : 34 as 33 : ? (d) 2 : 5 as 13 : ? (*hint*: may not be an integer)

4. Do the following word ratio problems.

- (a) You are throwing a party, and you need 5 liters of Fanta for every 12 guests. If you have 36 guests, how many liters of Fanta do you need?
(b) In the first 3 days of class, Dante lost 2 pencils. If Dante keeps losing pencils at the same rate for 60 days of class, how many pencils will he lose?
(c) Hungry Jose uses 7 scrambled eggs to make 4 breakfast burritos. How many breakfast burritos does he make with 21 scrambled eggs?
(d) Craig grades 9 tests every 2 minutes. If Craig has 63 tests to grade, how long will it take him?
(e) You are throwing a party, and you need 5 liters of Fanta for every 12 guests. If you have 36 guests, how many liters of Fanta do you need?
(f) Suppose Jose is 6' tall and casts a 9' shadow. How long is the shadow of a 10' lamp post? If he casts an 11' shadow, how long would the lamp post's shadow be?
(g) The ratio of the weight of Megs cat to the weight of Annes cat is 5:7. Megs cat weighs 20 kg. How much more does Annes cat weigh?
(h) Pat the Painter mixed 3 pints of yellow paint with 4 pints of green paint to make a nifty new color. He used 27 pints of yellow paint. How many pints of green paint will he need?

Extra problems

1. There are 10 ducks. 5 of these ducks lay an egg every day. The other 5 lay an egg every other day. How many eggs do the 10 ducks lay in a period of 10 days?
2. A student wrote down a natural number. When she divided the number by 9, the remainder was 7. What is the remainder when twice that number is divided by 9?
3. The area of a rectangle is 12. The lengths of its sides are natural numbers. The perimeter of this rectangle could be:
- (a) 20 (b) 26 (c) 32 (d) 28 (e) 24
4. During a rainstorm, 15 liters of water fell per square meter. By how much did the water level rise in an outdoor pool?
- (a) 150 cm (c) 15 cm (e) It depends on the pool's size.
(b) 0.15 cm (d) 1.5 cm
5. In a group of kangaroos, the two lightest kangaroos weigh 25% of the total weight of the group. The three heaviest kangaroos weigh 60% of the total weight. How many kangaroos are in the group?
6. In a school, there are lockers 1–100 that all start off closed. Jose gets bored and decides to flip the state of the lockers (if open, close it, and if closed, open it) in the following way. Starting at 2, Jose flips the state of lockers 2, 4, 6, ..., and then flips 3, 6, 9, ..., and so on all the way until 100. Which locker numbers are closed when Jose finishes?