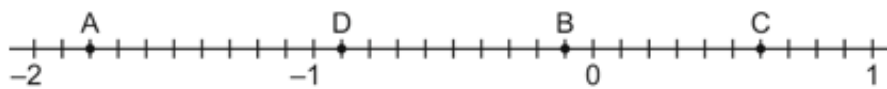


Lesson 3.1: What Is a Rational Number?

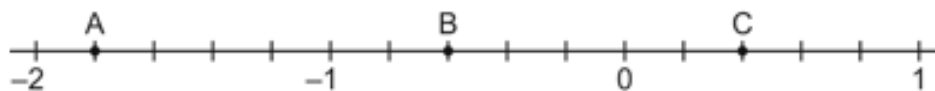
1. Which of the following numbers are equal to $-\frac{4}{5}$?

$$\frac{4}{5}, -\frac{5}{4}, -\frac{4}{5}, -\frac{4}{-5}, -\frac{8}{10} \quad \underline{\hspace{10em}}$$

2. Write the rational number represented by each letter as a decimal.



3. Write the rational number represented by each letter as a fraction.



4. Order the numbers from greatest to least. (Explain how you know)

$$-2.25, \frac{5}{4}, -1.5, -\frac{1}{8}, 0.9$$

5. In each pair, which rational number is greater? Explain how you know.

a) -7.3 , -7.2

b) $\frac{4}{5}$, $\frac{5}{4}$

c) 1.2 , -1.3

d) $-\frac{10}{13}$, $-\frac{10}{11}$

6. Diver A is 2.3 m below sea level.
Diver B is 1.7 m below sea level.
Diver C is 3.2 m below sea level.

a) Draw a vertical number line to show the location of the divers.

b) Which diver is farthest from the surface? Explain your thinking.

Lesson 3.2: Adding Rational Numbers

1. Determine each sum.

a) $-\frac{3}{4} + \frac{1}{2}$

b) $\frac{3}{4} + \frac{1}{2}$

c) $\frac{3}{4} + \left(-\frac{1}{2}\right)$

d) $-\frac{3}{4} + \left(-\frac{1}{2}\right)$

3. Sarah borrowed \$40.25 from her parents for a new sweater. She earns \$17.50 for a night of baby-sitting and gives this to her parents.

a) Write an addition statement to represent this situation. _____

b) How much does Sarah now owe? _____

4. Determine each sum.

a) $2\frac{2}{5} + \left(-4\frac{1}{2}\right)$

b) $-6\frac{3}{8} + \left(-1\frac{1}{5}\right)$

5. Determine each sum.

a) $-3.6 + (-21.9)$

b) $-0.81 + 2.4$

c) $9.78 + (-13.33)$

d) $4.88 + (-12.26)$

Lesson 3.3: Subtracting Rational Numbers

1. Determine each difference.

a) $-\frac{3}{4} - \frac{1}{2}$

b) $3\frac{3}{5} - \left(-5\frac{1}{2}\right)$

c) $3\frac{2}{7} - 4\frac{3}{5}$

d) $3\frac{1}{4} - \left(-2\frac{2}{3}\right)$

2. Two climbers leave base camp at the same time. Climber A ascends 20.4 m, while climber B descends 35.4 m. How far apart are the climbers? Write a subtraction statement using rational numbers to solve the problem.

3. Determine each difference.

a) $-4.7 - 5.9$

b) $0.94 - 1.35$

c) $-43.91 - (-9.44)$

6. Determine the missing rational number in each addition statement.

a) $-\frac{2}{3} - \square = 3\frac{5}{6}$

b) $\square - \left(-\frac{3}{4}\right) = -2\frac{1}{2}$

Lesson 3.4: Multiplying Rational Numbers

1. Determine each product.

a) $(-1.2) \times 0.3$ b) $0.34 \times (-0.5)$ c) $(-0.6) \times (-0.15)$ d) $0.9 \times (-1.2)$

e) $(1.19)(-13.2)$ f) $(-8.65)(-1.6)$

2. Determine each product.

a) $\frac{2}{5} \times \left(-\frac{1}{2}\right)$ b) $\left(-\frac{3}{2}\right) \times \left(\frac{1}{7}\right)$ c) $\left(-\frac{3}{4}\right) \times \left(-\frac{4}{5}\right)$

c) $\left(\frac{10}{7}\right)\left(-\frac{13}{8}\right)$ d) $\left(-4\frac{3}{5}\right)\left(-2\frac{5}{12}\right)$

3. From November 12th to November 21st, the temperature in Burnaby, B.C. dropped an average of 1.7°C each day. Suppose the temperature on the morning of November 12th was 11.4°C . What was the temperature on the morning of November 21st?

Lesson 3.5: Dividing Rational Numbers

1. Determine each quotient.

a) $(-1.6) \div 0.2$ b) $(-0.6) \div (-3)$ c) $16.4 \div (-5.5)$ d) $(-0.98) \div 12.4$

2. Calculate each quotient.

a) $\frac{1}{5} \div \left(-\frac{2}{5}\right)$ b) $\left(-\frac{2}{3}\right) \div \left(\frac{5}{6}\right)$ c) $\left(-\frac{3}{4}\right) \div \left(-\frac{5}{2}\right)$ d) $\frac{5}{9} \div \left(-\frac{2}{3}\right)$

c) $3\frac{1}{2} \div \left(-2\frac{1}{6}\right)$ d) $\left(-2\frac{1}{5}\right) \div \left(-4\frac{3}{4}\right)$

3. A diver descends 3.2 m in 5 min. What was his average rate of descent in metres per minute?

6. Replace each \square with a rational number to make each equation true.

a) $\square \times 2.5 = -1.6$

b) $(-5.7) \div \square = 1.5$

3. A formula for the area of a trapezoid is $A = a \left(\frac{b+c}{2} \right)$ where b and c are the lengths of the parallel sides and a is the perpendicular distance between these sides. Use the formula to determine the area of a trapezoid with: $a = 3.5$ cm, $b = 5.7$ cm, $c = 8.1$ cm.

4. Evaluate this expression. Round the answer to the nearest hundredth.

$$\frac{9.6 \times 12.6 - 5.1 \div (-7.4) - 0.6}{(-2.9) \div 1.3 - (-6.5)}$$

Lesson 3.6: Order of Operations with Rational Numbers

1. Evaluate.

a) $4.5 + 5.1 \div 1.7$

b) $-5.8 - 3.1 \times 0.5$

c) $\frac{2}{3} \times \left(-\frac{1}{2}\right) + \frac{5}{6}$

d) $\frac{3}{8} - \frac{9}{4} \div \left[\left(-\frac{5}{4}\right) + \left(-\frac{1}{10}\right)\right]$

e) $-4\frac{2}{3} \div \left[\left(-\frac{1}{3}\right) + 4\frac{1}{6}\right] + \left(-3\frac{2}{5}\right)$

f) $1\frac{5}{9} - \left(-2\frac{1}{6}\right) + \left[4\frac{1}{4} + \left(-3\frac{1}{2}\right)\right]^2 \div \frac{2}{5}$