4.

$$\frac{\left(-\frac{1}{2}\right)^2-\left(-\frac{2}{3}\right)}{\left[\frac{1}{3}+\left(-\frac{3}{12}\right)\right]}$$

Top:

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

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

$\frac{3}{12}+\left(\frac{+8}{12}\right)$

$=\boxed{\frac{11}{12}}$

Bottom:

$\frac{1}{3}+\left(\frac{-3}{12}\right)$

$\frac{4}{12}+\left(\frac{-3}{12}\right)$

$\frac{1}{12}$

$\frac{\text{Top}}{\text{Bottom}}=\frac{\frac{11}{12}}{\frac{1}{12}}=\frac{11}{12}\div\frac{1}{12}$

$=\frac{11}{\cancel{12}_1}\times\frac{\cancel{12}^1}{1}$

$=\frac{11}{1}\times\frac{1}{1}$

$=11$

Hints for TEST:

To list or compare decimals, remember to add a zero to the end of your decimal.

Example 3.210 3.220

To list or compare fractions, remember use common denominators.

Example $\frac{-1}{3}$ $\frac{-3}{5}$ (x5, x3) $\frac{-5}{15} > \frac{-9}{15}$

-5 is bigger than -9

Mixed to Improper

$-3\frac{1}{6} = \frac{(3 \times 6) + 1}{6} = \frac{-19}{6}$

Improper to Mixed

$\frac{36}{5} = (36 \div 5) = 7.? = 7\frac{1}{5}$

(7x5) = 35 + (1) = 36

Subtracting a Negative

-add the opposite

-8 - (-5)

= -8 + 5

= -3

To add and subtract fractions you need common denominators

1) $\frac{-1}{4} + \frac{5}{7}$

$= \frac{-7}{28} + \frac{20}{28}$

$= \frac{13}{28}$

ALWAYS REDUCE WHEN POSSIBLE

2) $-2\frac{1}{3} - 3\frac{2}{5}$

$= \frac{-7}{3} - \frac{17}{5}$

$= \frac{-35}{15} - \frac{51}{15}$

$= \frac{-86}{15}$

$= -5\frac{11}{15}$

Hints for TEST:

To Multiply fractions: $\frac{\text{top x top}}{\text{bottom x bottom}}$

DO NOT use COMMON DENOMINATORS

1) $\frac{-1}{3} \times \frac{6}{5}$

$= \frac{(-1 \times 6)}{(3 \times 5)}$

$= \frac{-6}{15}$

then reduce

$= \frac{-2}{5}$

ALWAYS REDUCE WHEN POSSIBLE

2) $2\frac{1}{3} \times -2\frac{2}{5}$

$= \frac{7}{3} \times \frac{-12}{5}$

$= \frac{(7 \times -12)}{(3 \times 5)}$

$= \frac{-84}{15}$

Question was in mixed so answer should be in mixed

$= -5\frac{12}{15}$

then reduce

$= -5\frac{3}{5}$

To DIVIDING fractions: FLIP AND MULTIPLY

DO NOT use COMMON DENOMINATORS

1) $\frac{-2}{7} \div \frac{3}{10}$

$= \frac{-2}{7} \times \frac{10}{3}$

$= \frac{(-2 \times 10)}{(7 \times 3)}$

$= \frac{-20}{21}$

ALWAYS REDUCE WHEN POSSIBLE

2) $5\frac{1}{4} \div -1\frac{2}{3}$

$= \frac{21}{4} \div \frac{-5}{3}$

$= \frac{21}{4} \times \frac{-3}{5}$

$= \frac{(21 \times -3)}{(4 \times 5)}$

$= \frac{-63}{20}$

Question was in mixed so answer should be in mixed

$= -3\frac{3}{20}$

---

as they appear

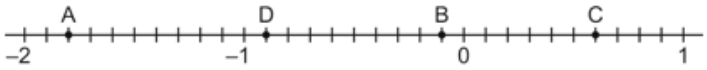
B	E	D	M	A	S
r	x	i	u	d	u
a	p	v	l	d	b
c	o	s	t		t
k	n	i	i		r
e	e	d	p		a
t	n	e	l		c
	t		y		t

Lesson 3.1: What Is a Rational Number?

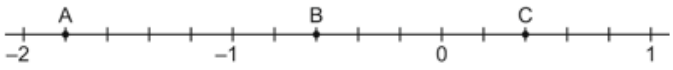
1. Which of the following numbers are equal to $-\frac{4}{5}$?

$\frac{4}{5}, -\frac{5}{4}, \frac{-4}{5}, \frac{-4}{-5}, -\frac{8}{10}$ _____

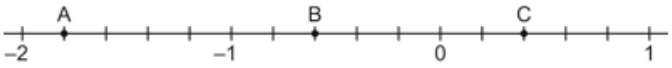
2. Write the rational number represented by each letter as a decimal.



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



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

Lesson 3.6: Order of Operations with Rational Numbers

1. Evaluate.

a) $4.5+5.1\div1.7$

b) $-5.8-3.1\times0.5$

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

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.

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