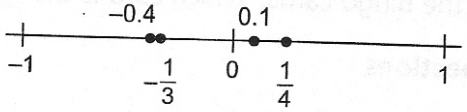
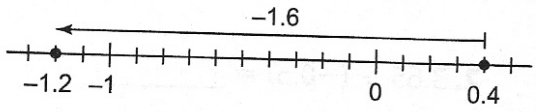
Unit 3 Study Guide

Skill	Description	Example
Compare and order rational numbers.	Numbers increase in value from left to right on a number line.	 From least to greatest: $-0.4, -\frac{1}{3}, 0.1, \frac{1}{4}$
Add rational numbers.	Model on a number line: Start at the first number. Move right to add a positive number; move left to add a negative number.	 $0.4 + (-1.6) = -1.2$
	Look for common denominators to add fractions. With decimals, add digits with the same place value.	$-\frac{2}{5} + \frac{1}{2} = -\frac{4}{10} + \frac{5}{10} = \frac{1}{10}$ $(-18.7) + 13.5 = -5.2$
Subtract rational numbers.	Add the opposite.	$3\frac{1}{3} - \left(-1\frac{2}{5}\right) = 3\frac{1}{3} + \left(+1\frac{2}{5}\right)$ $= 3 + 1 + \frac{5}{15} + \frac{6}{15}$ $= 4\frac{11}{15}$ $-18.7 - 13.5 = -18.7 + (-13.5)$ $= -32.2$
Multiply and divide rational numbers.	Use the same rules for signs as with integers. Then determine the numerical value.	$\left(-\frac{2}{3}\right) \times \frac{9}{8} = \frac{(-2)^{-1} \times 3^3}{3^1 \times 8^4}$ $= -\frac{3}{4}$ $(-6.3) \times 7 = -44.1$
		$\left(-2\frac{1}{5}\right) \div \left(-3\frac{3}{10}\right) = \left(-\frac{11}{5}\right) \div \left(-\frac{33}{10}\right)$ $= \left(-\frac{11^1}{5^1}\right) \times \left(-\frac{10^2}{33^3}\right)$ $= \frac{2}{3}$ $(-5.6) \div 0.7 = -8.0$
Use order of operations to evaluate expressions.	**B** Do the operations in brackets first. **E** Next, evaluate any exponents. **D** **M** Then, divide and multiply in order from left to right. **A** **S** Finally, add and subtract in order from left to right.	$(-2.50 + 1.75) \div (0.1 - (-0.4))^2$ $= -0.75 \div (0.1 + (+0.4))^2$ $= -0.75 \div (0.5)^2$ $= -0.75 \div 0.25$ $= -3$

Unit 3 Review

3.1 **1. a)** Write each number as a decimal.

i) $-\frac{16}{9} =$ _____

$=$ _____

ii) $-\frac{7}{3} =$ _____

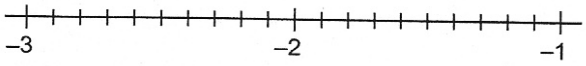
$=$ _____

iii) $-2\frac{1}{5} = -\frac{\quad}{\quad}$

$=$ _____

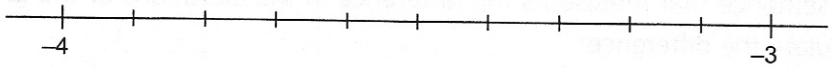
$=$ _____

b) Find two rational numbers between $-\frac{16}{9}$ and $-\frac{7}{3}$:



Two rational numbers between $-\frac{16}{9}$ and $-\frac{7}{3}$ are: ____ and ____

2. Order these numbers from least to greatest: -3.9, $-3\frac{4}{5}$, -3.3, $-\frac{7}{2}$



From least to greatest: _____

3.2 **3.** Calculate each sum.

a) $(-2.1) + 4.8 =$ _____

b) $25.6 + (-18.9) =$ _____

c) $(-6.4) + (-3.8) =$ _____

4. Add.

a) $-\frac{1}{8} + \left(-\frac{3}{4}\right)$

$= -\frac{1}{8} +$ ____

$=$ _____

b) $-\frac{4}{3} + \frac{11}{12}$

$=$ ____ $+ \frac{11}{12}$

$=$ _____

c) $\left(-1\frac{2}{3}\right) + 2\frac{8}{9} = (-1 + 2) + \left(__ + __\right)$

$= (-1 + 2) + \left(__ + __\right)$

$=$ _____

$=$ _____

3.3 **5.** Subtract.

a) $\left(-\frac{7}{12}\right) - \left(-\frac{2}{3}\right) = -\frac{7}{12} + \frac{2}{3}$

$= -\frac{7}{12} + \frac{\quad}{\quad}$

$= \frac{\quad}{\quad}$

b) $\frac{3}{5} - 2\frac{1}{7} = \frac{3}{5} + \left(-\frac{\quad}{7}\right)$

$= _____$

$= _____$

c) $-3\frac{1}{10} - 1\frac{3}{5} = -\frac{\quad}{10} + \left(-\frac{\quad}{5}\right)$

$= _____$

$= _____$

6. The table shows the elevations of several places on Earth.

Place	Elevation (m)
Mt. Everest	8849.7
Mt. Logan	5959.1
Death Valley	−410.9
Dead Sea	−417.3

Write a subtraction sentence that represents the difference in the elevations of the given locations. Then calculate the difference.

a) Mt. Logan and the Dead Sea

_____ − (_____) = _____ + _____

= _____

The difference in elevations is _____ m.

b) Death Valley and the Dead Sea

_____ − (_____) = _____ + _____

= _____

The difference in elevations is ____ m.

c) Mt. Everest and Mt. Logan

_____ − _____ = _____ + _____

= _____

The difference in elevations is _____ m.

3.4 **7.** What is the sign of each product?

a) $(-3.8) \times (-1.2)$ _____

b) $0.75 \times (-8.6)$ _____

c) $\left(-\frac{1}{3}\right)\left(-\frac{4}{9}\right)$ _____

d) $\left(-1\frac{2}{5}\right) \times \frac{7}{10}$ _____

8. Find each product.

a) $\left(-\frac{2}{5}\right)\left(-\frac{11}{20}\right)$

$= \frac{____ \times ____}{____ \times ____}$

$= \frac{____ \times ____}{____ \times ____}$

$= _____$

b) $\left(-\frac{4}{5}\right) \times \frac{25}{12}$

$= \frac{____ \times ____}{____ \times ____}$

$= \frac{____ \times ____}{____ \times ____}$

$= _____$

c) $-\frac{15}{16} \times 1\frac{1}{3}$

$= -\frac{15}{16} \times \frac{__}{3}$

$= \frac{____ \times ____}{____ \times ____}$

$= \frac{____ \times ____}{____ \times ____}$

$= _____$

d) $-3\frac{2}{3} \times \left(-2\frac{3}{11}\right)$

$= -\frac{__}{3} \times \left(-\frac{__}{11}\right)$

$= \frac{____ \times ____}{____ \times ____}$

$= \frac{____ \times ____}{____ \times ____}$

$= _____$

9. Circle the most reasonable answer.

	Question	Most reasonable answer		
a)	29.5 × 4.8	1.416	14.16	141.6
b)	5.4 × 0.7	0.378	3.78	37.8
c)	305.8 × 3.2	97.856	978.56	9785.6
d)	37.5 × 1.6	0.6	6	60

10. A diver descends at a speed of 0.8 m/min.
How far does the diver descend in 3.5 min?
The distance the diver descends is: _____ × _____

The product is _____. Multiply the whole numbers: _____ × _____ = _____

Estimate: _____ × _____ is about _____ × _____ = _____.

The exact answer is _____ × _____ = _____

The diver descends _____ m in 3.5 min.

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3.5 **11.** Divide.

a) $\frac{1}{5} \div \left(-\frac{7}{10}\right)$

$= \frac{1}{5} \times$ _____

$=$ _____

$=$ _____

$=$ ____

b) $\left(-\frac{3}{5}\right) \div \left(-\frac{12}{7}\right)$

$=$ _____

$=$ _____

$=$ _____

$=$ ____

3.6 **12.** Evaluate each expression.

a) $1.1 - 3.1 \times 7$

$= 1.1 -$ ____

$= 1.1 +$ (_____)

$=$ _____

b) $-1.8 \div (-0.3) + [5.1 - (-2.9)]$

$= -1.8 \div (-0.3) + [5.1 +$ ____]

$= -1.8 \div (-0.3) +$ __

$=$ ___ + ___

$=$ ___

c) $\left(-\frac{5}{6}\right) \times \frac{1}{4} + \frac{5}{12}$

$=$ _____ $+ \frac{5}{12}$

$=$ ____ $+ \frac{5}{12}$

$=$ ____ + ____

$=$ _____

d) $1\frac{3}{4} + \frac{2}{3} \div \left(-\frac{8}{9}\right)$

$= 1\frac{3}{4} + \frac{2}{3} \times$ _____

$= 1\frac{3}{4} +$ ____ × ____ / ____ × ____

$= 1\frac{3}{4} +$ ____

$=$ ___ $+$ ____

$=$ _____