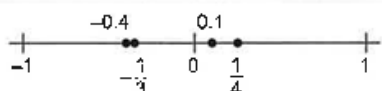
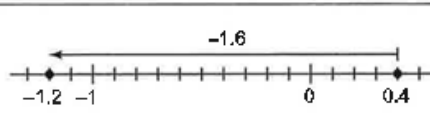


Unit 3 Study Guide

Skill	Description	Example
Compare and order rational numbers.	Numbers increase in value from left to right on a number line.	 <p>From least to greatest: $-0.4, \frac{1}{3}, 0.1, \frac{1}{4}$</p>
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.	 <p>$0.4 + (-1.6) = -1.2$</p>
	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.	$3\frac{1}{3} - \left(\frac{12}{5}\right) = 3\frac{1}{3} + \left(+\frac{12}{5}\right)$ $= 3 + 1 + \frac{4}{15} + \frac{6}{15}$ $= 4\frac{11}{15}$ $-18.7 - 13.5 = -18.7 + (-13.5)$ $= -32.2$
Multiply and divide rational numbers.	Use the same rules for signs as with integers. Then determine the numerical value.	$\left(-\frac{2}{3}\right) \times \frac{9}{8} = \frac{(-2)^1 \times 9^1}{3^1 \times 8^1}$ $= -\frac{3}{4}$ $(-6.3) \times 7 = -44.1$
		$\left(-2\frac{1}{5}\right) \div \left(-3\frac{3}{10}\right) = \left(\frac{11}{5}\right) \div \left(\frac{33}{10}\right)$ $= \left(\frac{11^1}{5^1}\right) \times \left(\frac{10^2}{33^1}\right)$ $= \frac{2}{3}$ $(5.6) \div 0.7 = -8.0$
Use order of operations to evaluate expressions.	B Do the operations in brackets first.	$(-2.50 + 1.75) \div (0.1 - (-0.4))^2$ $= -0.75 \div (0.1 + (+0.4))^2$ $= -0.75 \div (0.5)^2$ $= -0.75 \div 0.25$ $= -3$
	E Next, evaluate any exponents.	
	D Then, divide and multiply in order from left to right.	
	A Finally, add and subtract in order from left to right.	

Unit 3 Review

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

$$\text{i) } -\frac{16}{9} = \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

$$\text{ii) } -\frac{7}{3} = \underline{\hspace{2cm}}$$

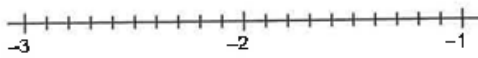
$$= \underline{\hspace{2cm}}$$

$$\text{iii) } -2\frac{1}{5} = -\frac{\hspace{1cm}}{\hspace{1cm}}$$

$$= \underline{\hspace{2cm}}$$

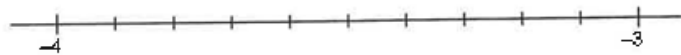
$$= \underline{\hspace{2cm}}$$

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: $\underline{\hspace{1cm}}$ and $\underline{\hspace{1cm}}$

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



From least to greatest: $\underline{\hspace{4cm}}$

3.2 3. Calculate each sum.

a) $(-2.1) + 4.8 = \underline{\hspace{2cm}}$

b) $25.6 + (-18.9) = \underline{\hspace{2cm}}$

c) $(-6.4) + (-3.8) = \underline{\hspace{2cm}}$

4. Add.

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

$$= -\frac{1}{8} + \underline{\hspace{1cm}}$$

$$= \underline{\hspace{2cm}}$$

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

$$= \underline{\hspace{1cm}} + \frac{11}{12}$$

$$= \underline{\hspace{2cm}}$$

$$\text{c) } \left(-1\frac{2}{3}\right) + 2\frac{8}{9} = (-1 + 2) + \left(\underline{\hspace{1cm}} + \underline{\hspace{1cm}}\right)$$

$$= (-1 + 2) + \left(\underline{\hspace{1cm}} + \underline{\hspace{1cm}}\right)$$

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

3.3 5. Subtract.

a) $\left(\frac{7}{12}\right) - \left(\frac{2}{3}\right) = -\frac{7}{12} + \frac{2}{3}$
 b) $\frac{3}{5} - 2\frac{1}{7} = \frac{3}{5} + \left(-\frac{14}{7}\right)$
 c) $-3\frac{1}{10} - 1\frac{3}{5} = -\frac{31}{10} + \left(-\frac{6}{5}\right)$
 $-\frac{7}{12} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}}$

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

$\underline{\hspace{2cm}} - (\underline{\hspace{2cm}}) = \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}}$

The difference in elevations is $\underline{\hspace{2cm}}$ m.

b) Death Valley and the Dead Sea

$\underline{\hspace{2cm}} - (\underline{\hspace{2cm}}) = \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}}$

The difference in elevations is $\underline{\hspace{2cm}}$ m.

c) Mt. Everest and Mt. Logan

$\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}}$

The difference in elevations is $\underline{\hspace{2cm}}$ m.

3.4 7. What is the sign of each product?

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

$\underline{\hspace{2cm}}$

b) $0.75 \times (-8.6)$

$\underline{\hspace{2cm}}$

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

$\underline{\hspace{2cm}}$

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

$\underline{\hspace{2cm}}$

8. Find each product.

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

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

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

$$= \underline{\hspace{2cm}}$$

b) $\left(-\frac{4}{5}\right) \times \frac{25}{2}$

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

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

$$= \underline{\hspace{2cm}}$$

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

$$= -\frac{15}{16} \times \frac{\quad}{\quad}$$

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

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

$$= \underline{\hspace{2cm}}$$

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

$$= -\frac{\quad}{\quad} \times \left(-\frac{\quad}{\quad}\right)$$

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

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

$$= \underline{\hspace{2cm}}$$

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: $\underline{\hspace{1cm}} \times \underline{\hspace{1cm}}$

The product is $\underline{\hspace{2cm}}$. Multiply the whole numbers: $\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

Estimate: $\underline{\hspace{1cm}} \times \underline{\hspace{1cm}}$ is about $\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$.

The exact answer is $\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

The diver descends $\underline{\hspace{1cm}}$ m in 3.5 min.

3.5 11. Divide.

$$\begin{aligned} \text{a) } & \frac{1}{5} \div \left(-\frac{7}{10}\right) \\ & = \frac{1}{5} \times \underline{\hspace{2cm}} \\ & = \underline{\hspace{2cm}} \\ & = \underline{\hspace{2cm}} \\ & = \underline{\hspace{2cm}} \end{aligned}$$

$$\begin{aligned} \text{b) } & \left(-\frac{3}{5}\right) \div \left(-\frac{12}{7}\right) \\ & = \underline{\hspace{2cm}} \\ & = \underline{\hspace{2cm}} \\ & = \underline{\hspace{2cm}} \\ & = \underline{\hspace{2cm}} \end{aligned}$$

3.6 12. Evaluate each expression.

$$\begin{aligned} \text{a) } & 1.1 - 3.1 \times 7 \\ & = 1.1 - \underline{\hspace{2cm}} \\ & = 1.1 + (\underline{\hspace{2cm}}) \\ & = \underline{\hspace{2cm}} \end{aligned}$$

$$\begin{aligned} \text{b) } & -1.8 \div (-0.3) + [5.1 - (-2.9)] \\ & = -1.8 \div (-0.3) + [5.1 + \underline{\hspace{2cm}}] \\ & = -1.8 \div (-0.3) + \underline{\hspace{2cm}} \\ & = \underline{\hspace{2cm}} + \underline{\hspace{2cm}} \\ & = \underline{\hspace{2cm}} \end{aligned}$$

$$\begin{aligned} \text{c) } & \left(-\frac{5}{6}\right) \times \frac{1}{4} + \frac{5}{12} \\ & = \underline{\hspace{2cm}} + \frac{5}{12} \\ & = \underline{\hspace{2cm}} + \frac{5}{12} \\ & = \underline{\hspace{2cm}} + \underline{\hspace{2cm}} \\ & = \underline{\hspace{2cm}} \end{aligned}$$

$$\begin{aligned} \text{d) } & 1\frac{3}{4} - \frac{2}{3} \div \left(\frac{8}{9}\right) \\ & = 1\frac{3}{4} - \frac{2}{3} \times \underline{\hspace{2cm}} \\ & = 1\frac{3}{4} - \frac{\underline{\hspace{2cm}} \times \underline{\hspace{2cm}}}{\underline{\hspace{2cm}} \times \underline{\hspace{2cm}}} \\ & = 1\frac{3}{4} - \underline{\hspace{2cm}} \\ & = \frac{\underline{\hspace{2cm}}}{4} - \underline{\hspace{2cm}} \\ & = \underline{\hspace{2cm}} \end{aligned}$$