

# Answer Key

## Number Sense Review Booklet 1

1. Demonstrate an understanding of place value, including numbers that are:

- greater than one million
- less than one thousandth
  - Explain how the pattern of the place value system, i.e., the repetition of ones, tens and hundreds within each period, makes it possible to read and write numerals for numbers of any magnitude.
  - Provide examples of where large and small numbers are used; e.g., media, science, medicine, technology.

Write the following numbers in decimal form:

- a. one hundred million ten thousand ten

100 010 010

- b. ten million one hundred thousand one

10 100 001

- c. ten and ten thousandths one hundred millionths

10.00100001

Write the following decimal numbers in words:

- a. 100 101 010.011

one hundred million one hundred one thousand ten and eleven thousandths

- b. 1 010 100.100 11

one million ten thousand one hundred and one tenth eleven hundred thousandths

Write the following numbers in order from least to greatest:

- a. 0.4, 0.42, 0.355, 0.5, 0.055

0.055, 0.355, 0.4, 0.42, 0.5

- b. 1.20, 1.02, 1.18, 1.1, 1.28

1.02, 1.1, 1.18, 1.20, 1.28

8. Demonstrate an understanding of multiplication and division of decimals (1-digit whole number multipliers and 1-digit natural number divisors).

- Place the decimal point in a product, using front-end estimation; e.g., for  $15.205 \text{ m} \times 4$ , think  $15 \text{ m} \times 4$ , so the product is greater than 60 m.
- Place the decimal point in a quotient, using front-end estimation; e.g., for  $\$26.83 \div 4$ , think  $\$24 \div 4$ , so the quotient is greater than \$6.
- Correct errors of decimal point placement in a given product or quotient without using paper and pencil.
- Predict products and quotients of decimals, using estimation strategies.
- Solve a given problem that involves multiplication and division of decimals using multipliers from 0 to 9 and divisors from 1 to 9.

Multiply the decimal numbers:

a.  $2.4 \times 6$

$$\begin{array}{r} 2 \\ 2.4 \\ \times 6 \\ \hline 14.4 \end{array}$$

b.  $12.50 \times 3$

$$\begin{array}{r} 12.5 \\ \times 3 \\ \hline 37.5 \end{array}$$

c.  $6.15 \times 8$

$$\begin{array}{r} 6.15 \\ \times 8 \\ \hline 49.20 \end{array}$$

d.  $0.15 \times 8$

$$\begin{array}{r} 0.15 \\ \times 8 \\ \hline 1.20 \end{array}$$

e.  $0.015 \times 8$

$$\begin{array}{r} 0.015 \\ \times 8 \\ \hline 0.120 \end{array}$$

f.  $2.302 \times 9$

$$\begin{array}{r} 2.302 \\ \times 9 \\ \hline 20.718 \end{array}$$

Divide the following decimal numbers:

a.  $51.2 \div 4$

$$\begin{array}{r} 12.8 \\ 4 \overline{) 51.2} \\ \underline{40} \phantom{0} \\ 11 \phantom{0} \\ \underline{8} \phantom{0} \\ 32 \\ \underline{32} \\ 0 \end{array}$$

b.  $1.92 \div 3$

$$\begin{array}{r} 0.64 \\ 3 \overline{) 1.92} \\ \underline{30} \phantom{0} \\ 19 \phantom{0} \\ \underline{18} \phantom{0} \\ 12 \\ \underline{12} \\ 0 \end{array}$$

c.  $0.46 \div 5$

$$\begin{array}{r} 0.092 \\ 5 \overline{) 0.460} \\ \underline{00} \phantom{0} \\ 04 \phantom{0} \\ \underline{00} \phantom{0} \\ 46 \\ \underline{45} \\ 10 \\ \underline{10} \\ 0 \end{array}$$

## 2. Solve problems involving whole numbers and decimal numbers.

- Identify which operation is necessary to solve a given problem, and solve it.
- Determine the reasonableness of an answer.
- Estimate the solution to, and solve, a given problem.
- Determine whether the use of technology is appropriate to solve a given problem, and explain why.
- Use technology when appropriate to solve a given problem.

Solve the following problems using decimals, show your work.

- a. Bart buys 4 bottles of Mountain Dew, each bottle of pop costs \$1.75 how much did Bart pay?

$$\begin{array}{r} 32 \\ 1.75 \\ \times 4 \\ \hline 7.00 \end{array}$$

\$7.00

- b. Lisa pays a total of \$14.40 for 6 bags of chips, what was the price of one bag of chips?

$$\begin{array}{r} 2.40 \\ 6 \overline{)14.40} \\ \underline{12} \phantom{0} \\ 24 \\ \underline{24} \\ 00 \end{array}$$

\$2.40

- c. Given the price list below, Dexter buys 2 hamburgers, 3 orders of French fries and 1 milkshake. If Dexter paid with a \$20.00 dollar bill how much change will he get?

Hamburger	2.50
French fries	1.75
Milkshake	3.25

$$\begin{array}{r} 1 \\ 2.50 \\ + 2.50 \\ \hline \$5.00 \end{array}$$

$$\begin{array}{r} 1 \\ 5.00 \\ + 4.25 \\ + 3.25 \\ \hline \$12.50 \end{array}$$

$$\begin{array}{r} 11 \\ 1.75 \\ \times 3 \\ \hline \$4.25 \end{array}$$

\$12.50

## 3. Demonstrate an understanding of factors and multiples by:

- determining multiples and factors of numbers less than 100
- identifying prime and composite numbers
- solving problems using multiples and factors.
  - Identify multiples for a given number, and explain the strategy used to identify them.
  - Determine all the whole number factors of a given number, using arrays.
  - Identify the factors for a given number, and explain the strategy used; e.g., concrete or visual representations, repeated division by prime numbers, factor trees.
  - Provide an example of a prime number, and explain why it is a prime number.
  - Provide an example of a composite number, and explain why it is a composite number.
  - Sort a given set of numbers as prime and composite.
  - Solve a given problem involving factors or multiples.
  - Explain why 0 and 1 are neither prime nor composite.

Write the first 5 multiples of:

a. 8

8, 16, 24, 32, 40

b. 6

6, 12, 18, 24, 30

c. 9

9, 18, 27, 36, 45,

d. 15

15, 30, 45, 60, 75

Write 4 common multiples of:

a. 6 &amp; 8

6, 12, 18, 24, 30, 36, 42, 48, 72, 96  
8, 16, 24, 32, 40, 48

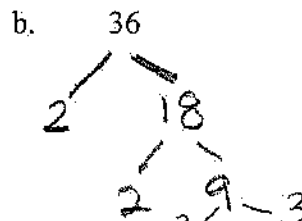
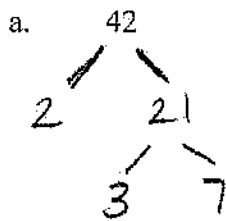
b. 6 &amp; 9

6, 12, 18, 24, 30, 36, 42, 48, 54, 72  
9, 18, 27, 36, 45, 54, 63, 72

c. 6 &amp; 15

6, 12, 18, 24, 30, 36, 42, 48, 54, 60  
15, 30, 45, 60  
90, 120

Draw a factor tree for the following numbers:



Write all the factors of the following numbers, (remember the rainbow method).

a. 32

1, 2, 4, 8, 16, 32

b. 48

1, 2, 3, 4, 6, 8, 12, 16, 24, 48

Write all the prime numbers:

a. that are less than 20

1, 2, 3, 5, 7, 11, 13, 17, 19

b. that are between 40 and 60

41, 43, 47, 53, 59

Use factors and multiples to solve the following problems:

- a. Hot dogs are sold in packages of 6 and buns are sold in packages of 10, at a BBQ you need an equal number of hot dogs and buns. There are 22 people coming to the BBQ and it is okay to have left overs. How many hot dogs and buns do you need to buy?

$$6 \times 4 = 24 \text{ hot dogs}$$

$$10 \times 3 = 30 \text{ buns}$$

- b. If the hot dogs are \$3.45 per package and the buns are \$2.35 per package how much money will it cost you for the hot dogs and buns?

$$\begin{array}{r}
 3.45 \\
 \times 4 \\
 \hline
 13.80
 \end{array}$$

$$\begin{array}{r}
 2.35 \\
 \times 3 \\
 \hline
 7.05
 \end{array}$$

$$\begin{array}{r}
 13.80 \\
 + 7.05 \\
 \hline
 \$ 20.85
 \end{array}$$

\$ 20.85

- c. ~~Boston pizza cuts their pizzas into 12 slices. There are 8 baseball players who go out for pizza, each player eats the same number of pizzas and there are no slices left over. How many pizzas did the baseball team buy? (could there be more than one answer?)~~

4. Relate improper fractions to mixed numbers and mixed numbers to improper fractions.

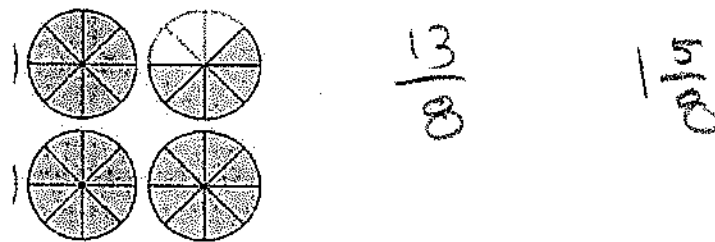
- Demonstrate, using models, that a given improper fraction represents a number greater than 1.
- Express improper fractions as mixed numbers.
- Express mixed numbers as improper fractions.
- Place a given set of fractions, including mixed numbers and improper fractions, on a number line, and explain strategies used to determine position.
- Translate a given improper fraction between concrete, pictorial and symbolic forms.
- Translate a given mixed number between concrete, pictorial and symbolic forms.

Write the following as an improper fraction and a mixed number?

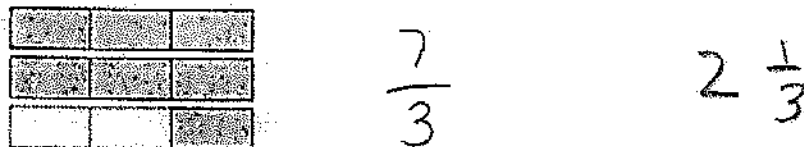
a.



b.



c.



Write two new fractions that are equivalent to the first fraction given:

a.  $\frac{2}{3}$

$\frac{4}{6}, \frac{8}{12}$

b.  $\frac{3}{5}$

$\frac{6}{10}, \frac{9}{15}$

c.  $\frac{12}{16}$

$\frac{24}{32}, \frac{36}{48}$

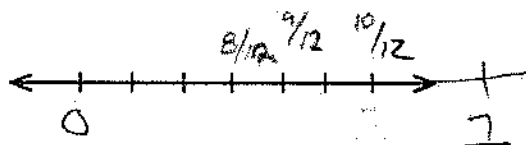
d.  $\frac{20}{36}$

$\frac{40}{72}, \frac{60}{108}$

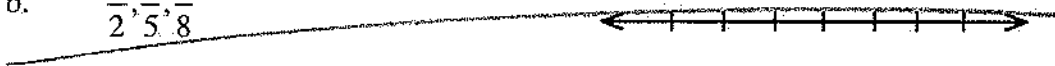
Write each of the fractions with a common denominator, then write the fractions in order on the number line.

a.  $\frac{2}{3}, \frac{5}{6}, \frac{3}{4}$

$\frac{8}{12}, \frac{10}{12}, \frac{9}{12}$

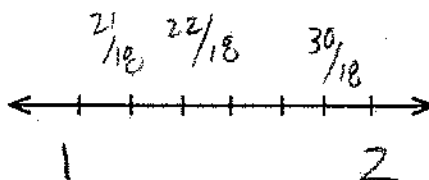


b.  $\frac{1}{2}, \frac{3}{5}, \frac{5}{8}$



c.  $\frac{5}{3}, \frac{7}{6}, \frac{11}{9}$

$\frac{30}{18}, \frac{21}{18}, \frac{22}{18}$



Write the following fractions as a mixed number:

a.  $\frac{24}{5}$

$$4\frac{4}{5}$$

b.  $\frac{30}{7}$

$$4\frac{2}{7}$$

Write the following mixed numbers as an improper fraction:

a.  $3\frac{1}{4}$

$$\frac{13}{4}$$

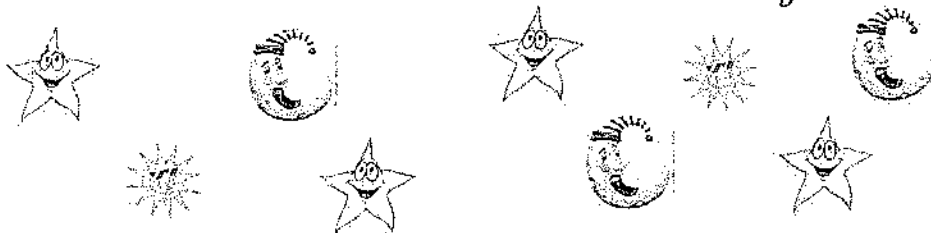
b.  $5\frac{2}{9}$

$$\frac{47}{9}$$

5. Demonstrate an understanding of ratio, concretely, pictorially and symbolically.

- Provide a concrete or pictorial representation for a given ratio.
- Write a ratio from a given concrete or pictorial representation.
- Express a given ratio in multiple forms, such as 3:5,  $\frac{3}{5}$  or 3 to 5.
- Identify and describe ratios from real-life contexts, and record them symbolically.
- Explain the part/whole and part/part ratios of a set; e.g., for a group of 3 girls and 5 boys, explain the ratios 3:5, 3:8 and 5:8.
- Solve a given problem involving ratio.

Express each of the following as a ratio  $a:b$  and as a fraction  $\frac{a}{b}$ .



a. What is the ratio of stars to moons?

$$4:3 \quad \frac{4}{3}$$

b. What ratio of the objects are stars?

$$\frac{4}{9} \quad 4:9$$

c. What is the ratio of suns to stars?

$$2:4 \quad \frac{2}{4}$$

d. What ratio of the objects are suns?

$$2:9 \quad \frac{2}{9}$$



Lisa is making rice for supper, the directions say that for one cup of rice you will need 2 cups of water and it will make 3 cups of prepared rice.

- a. what is the ratio of - uncooked rice : water : prepared rice?

$$1 : 2 : 3$$

- b. If Lisa wishes to make 12 cups of prepared rice how much uncooked rice and how much water will she need?

$$4 : 8 : 12$$

A recipe for lemonade uses 3 whole lemons,  $\frac{1}{2}$  cup sugar, and 1 L of water

- a. what is the ratio of - lemons : sugar : water ?

$$3 : \frac{1}{2} : 1$$

- b. If you wanted to make 5 L of lemonade how many lemons and how much sugar would you need?

$$15 : 2\frac{1}{2} : 5$$

6. Demonstrate an understanding of percent (limited to whole numbers), concretely, pictorially and symbolically.

- Explain that "percent" means "out of 100."
- Explain that percent is a ratio out of 100.
- Use concrete materials and pictorial representations to illustrate a given percent.
- Record the percent displayed in a given concrete or pictorial representation.
- Express a given percent as a fraction and a decimal.
- Identify and describe percents from real-life contexts, and record them symbolically.
- Solve a given problem involving percents.

Write the following fractions as a decimal and as a percent.

a.  $\frac{7}{10} = 0.7 = 70\%$       b.  $\frac{12}{20} \times \frac{5}{5} = \frac{60}{100} = 60\%$

c.  $\frac{16}{25} \times \frac{4}{4} = \frac{64}{100} = 64\%$       d.  $\frac{5}{8} \times \frac{625}{1000} = 62.5\%$   
12.5

Write the following percent numbers as a decimal and a fraction

a. 40%

$$0.40 \quad \frac{40}{100} = \frac{4}{10}$$

b. 75%

$$0.75 \quad \frac{75}{100} = \frac{3}{4}$$

c. 65%

$$0.65 \quad \frac{65}{100} = \frac{13}{20}$$

d. 9%

$$0.09 \quad \frac{9}{100}$$

For the following diagrams write an expression for the shaded portion as a fraction and as a percent.

a.



$$\frac{4 \times 20}{5 \times 20} = \frac{80}{100}$$

80%

b.



$$\frac{7}{8} =$$

0.875

On a math quiz Dexter got a mark of  $\frac{17}{20}$  what was Dexter's mark as a percent?

$$\frac{17}{20} = 17 \div 20 = 85\%$$

$$\frac{17}{20} \times \frac{5}{5} = \frac{85}{100} = 85\%$$

There were 40 questions on the science unit test, Lisa gets a mark of 80%, how many questions did she get wrong?

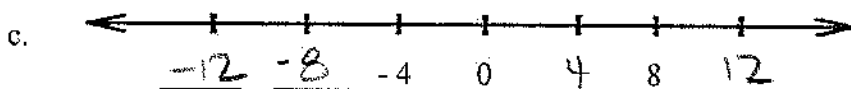
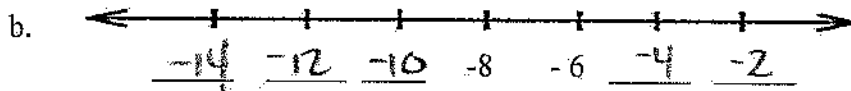
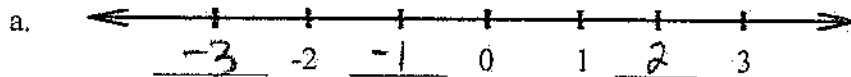
$$\frac{32}{40} = \frac{80}{100}$$

$$\begin{array}{r} 40 \\ -32 \\ \hline 8 \end{array}$$

7. Demonstrate an understanding of integers, concretely, pictorially and symbolically.

- Extend a given number line by adding numbers less than zero, and explain the pattern on each side of zero.
- Place given integers on a number line, and explain how integers are ordered.
- Describe contexts in which integers are used; e.g., on a thermometer.
- Compare two integers; represent their relationship using the symbols  $<$ ,  $>$  and  $=$ ; and verify the relationship, using a number line.
- Order given integers in ascending or descending order.

Look at the patterns below and complete the number lines:



Place the following integers in order from smallest to largest.

a.  $+4, -3, -4, +1, -5, +2$

$-5, -4, -3, +1, +2, +4$

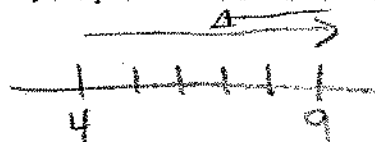
b.  $+7, -10, +5, -1, -3$

$-10, -3, -1, +5, +7$

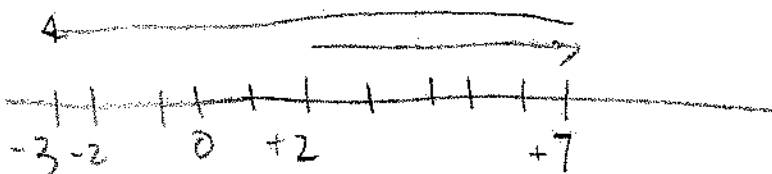
Write each answer as an integer, explain your reasoning.

- a. You are on the 4<sup>th</sup> floor of a hotel, the elevator goes up 5 floors and then down 2 floors. What floor do you finally stop on? Write a mathematical expression for the elevator ride.

7<sup>th</sup> Floor



- b. It is  $+2^{\circ}\text{C}$  in the morning in Balzac, during the day the temperature increases by  $5^{\circ}$  then over night the temperature decreases by  $10^{\circ}\text{C}$ . What is the temperature at night? Show how you solved this problem.



$-3^{\circ}\text{C}$

Put the correct sign between each pair of terms [ $<$ ,  $>$ ,  $=$ ]:

a.  $-10 < +10$

b.  $-5 > -7$

c.  $0 > -4$

d.  $-8 < +4$

9. Explain and apply the order of operations, excluding exponents, with and without technology (limited to whole numbers).

- Explain, using examples, why there is a need to have a standardized order of operations.
- Apply the order of operations to solve multistep problems with and without technology; e.g., a computer, a calculator.

Using the correct order of operations calculate the value of each of the following expressions (show your steps):

a.  $24 + 15 - 13$

$26$

$$\begin{array}{r} 24 \\ + 15 \\ \hline 39 \\ - 13 \\ \hline 26 \end{array}$$

b.  $32 - 20 + 15 - 6$

$21$

$$\begin{array}{r} 32 \\ - 20 \\ \hline 12 \\ + 15 \\ \hline 27 \\ - 6 \\ \hline 21 \end{array}$$

c.  $6 \times 8 + 3$

$$= 48 + 3 \\ = 51$$

d.  $20 \div 5 \times 9$

$$= 4 \times 9 \\ = 36$$

e.  $12 + 3 \times 6$

$$12 + 18 \\ = 30$$

f.  $8 - 15 \div 3$

$$= 8 - 5 \\ = 3$$

g.  $5 \times (15 - 8)$

$$= 5 \times 7 \\ = 35$$

h.  $16 \div (8 - 6)$

$$16 \div 2 \\ = 8$$

i.  $2 \times 3 + 12 \div 4$

$$6 + 12 \div 4 \\ 6 + 3 \\ = 9$$

j.  $24 \div 6 - 28 \div 7$

$$4 - 28 \div 7 \\ 4 - 4 \\ = 0$$

Solve the following number problems, write a number sentence (equation) before you solve the problem:

- a. Peter has 4 packages of baseball cards, each package has 6 cards, Peter's friend Evan gives Peter 3 more baseball cards. How many baseball cards does Peter have?

$$\begin{aligned}4 \times 6 + 3 \\ 24 + 3 \\ = 27\end{aligned}$$

- b. Marsha has 48 caramels and she divides them evenly into 6 bags. Marsh then eats 3 caramels out of one of these bags. How many caramels are left in that bag?

$$\begin{aligned}48 \div 6 - 3 \\ 8 - 3 \\ = 5\end{aligned}$$

- c. Larry has 20 cm of cord he cuts off 6 pieces that are 3 cm each. How much cord is left over?

$$\begin{aligned}20 - (6 \times 3) \\ 20 - 18 \\ = 2 \text{ cm}\end{aligned}$$