Grade 6 – Lesson 2

Math Practice Sheets

Number Concepts Part II

- Examples
- Practice Questions
- Extra Challenge Unit

Student Name

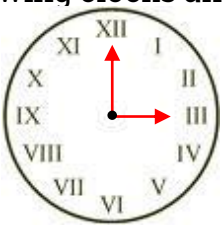
_____

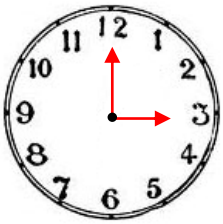
Unit 2.1

Introducing Roman Numerals

Example

Look at the following clocks and compare the numerals.





The ancient Romans used different symbols for counting numbers which are found in use even today. These are called Roman numerals. i.e.

Roman Numerals	I	V	X	L	C	D	M
Value of symbols	1	5	10	50	100	500	1,000

Note that there is no Roman numeral for zero.

- The symbols I, X, and C, are never repeated more than 3 times in a number and the symbols V, L, and D cannot be repeated. A Symbol placed before another symbol means a number less than that symbol. 'I' can be subtracted from X and V only and each symbol can be subtracted only once. i.e. IV = 5 - 1 = 4, XC = 100 - 10 = 90, etc
- A symbol placed after another means a number more than that symbol. The last symbol can be repeated at most 3 times.
  i.e. XI = 10 + 1 = 11, CVII = 100 + 5 + 1 + 1 = 107

Exercise

1. Match the following.

a)	XIII	A)	XIX
b)	600	B)	15
c)	40	C)	504
d)	DIV	D)	13
e)	XV	E)	DC
f)	19	F)	XL

Unit 2.1

Introducing Roman Numerals

Exercise

2. Write the Roman numerals for the following numbers.

a) 7

b) 23

c) 47

d) 89

e) 93

f) 38

3. Write the value of the Roman symbols.

a) IX	b) XXII	c) XIV
d) VIII	e) XX	f) XV
g) LIII	h) XXVII	i) XXXVI

4. Which of the following are valid Roman numerals? If it is valid, write the value of that Roman symbol.

a) II ☐

b) VIII ☐

c) VX ☐

d) XV ☐

e) XXIV ☐

f) IXV ☐

Unit 2.1

Introducing Roman Numerals

Exercise

Solve the problems below.

5. Fill in the blanks using roman numerals.

   a) I am studying in grade _____.

   b) I have _____ fingers in my hands.

   c) There are _____ states in America.

   d) There are _____ days in a week.

6. Henny says LX represents 40. Tess says XL represents 40. Who is correct and how?

7. The value of the Roman symbol LXV represents

   a) 56 b) 65

   c) 165 d) 75

8. Match the following.

a)	CI	A)	CXC
b)	400	B)	101
c)	CM	C)	900
d)	190	D)	CD

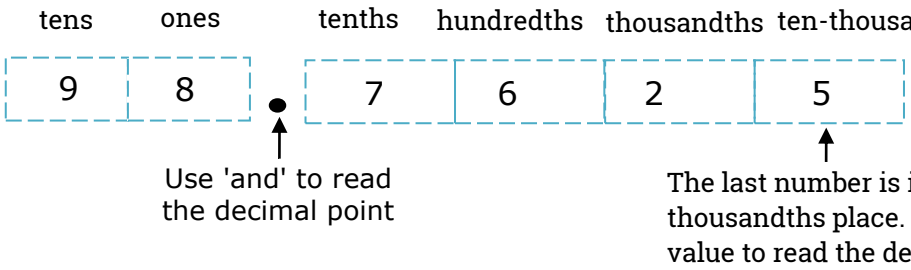
Unit 2.2

Introduction to Decimals

Example

A decimal is a number that uses a "decimal" point to separate a number into a whole number part (left of the point) and a part less than a whole (right of the point) i.e. 3.2, where 3 is the whole number, and 2 is the part of a whole. A number in this form is called a decimal number.

For example: You can use a place value chart to help you read a decimal 98.7625.



Standard form: 98.7625

Short-word form: 98 and 7.625 ten thousandths

Word form: Ninety-eight and seven thousand six hundred twenty-five ten-thousandths

Expanded form: $(9 \times 10) + (8 \times 1) + (7 \times 0.1) + 6 \times (0.01) + 2 \times (0.001) + (5 \times 0.0001)$

$= 90 + 8 + 0.7 + 0.06 + 0.002 + 0.0005$

Exercise

1. Write the place and value of the circled digit.

a) 2.308

Place:

Value:

b) 40.571

Place:

Value:

c) 679.102

Place:

Value:

d) 0.0049

Place:

Value:

e) 3.00027

Place:

Value:

f) 8.672

Place:

Value:

Unit 2.2

Introduction to Decimals

Exercise

2. Write the following decimal numbers in the indicated form.

a) twenty-eighth millionths in standard form

b) 5 + 0.2 + 0.01 + 0.009 + 0.0006 + 0.00005 in standard form

c) 37.281 in word form

d) 699.0702 in short-word form

e) 14.5003 in expanded form

f) seven and seventy-three hundredth in standard form

g) 80 + 4 + 0.1 + 0.07 + 0.004 + 0.0008 in standard form

h) 1.9753 in word form

i) 261.035 in expanded form

j) 945.107 in short-word form

Unit 2.2

Introduction to Decimals

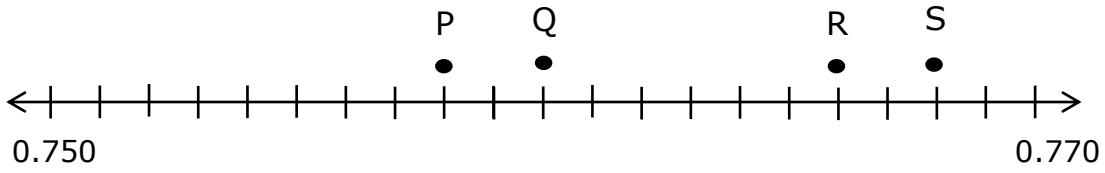
Exercise

Solve the problems below.

3. A single seed of certain orchids can weigh 0.000035 ounce. Write the place and value of 3.

4. The Borneo stick insect has a total length, including legs of 21.5 inches. Write 21.5 in word form and in expanded form.

5. Which point on the number line below best represents 0.768?



a) P b) Q

c) R d) S

6. Scientists measured a Madeira cockroach and found it to be 3.438 centimeters long. Show 3.438 in a place value chart. Write it in short word form and in expanded form.

Unit 2.3

Special Decimal Numbers

Example

Find $0.37 \times 1{,}000$ or 0.37×10^3.

You can use the following table to find the product.

Factor	Exponential form	Decimal point moves right
10	10^1	1 place
100	10^2	2 places
1,000	10^3	3 places
10,000	10^4	4 places

So, to multiply by 1,000 or 10^3, move the decimal point 3 places to the right. Add zeros if needed.

i.e. $0.37 \times 1{,}000$ or 0.37×10^3

So, $0.37 \times 1{,}000 = 370$ or, $0.37 \times 10^3 = 370$

Find $9.2 \div 100$ or $9.2 \div 10^2$.

As in multiplication, you can use the following table to find the quotient.

Factor	Exponential form	Decimal point moves left
10	10^1	1 place
100	10^2	2 places
1,000	10^3	3 places
10,000	10^4	4 places

So, to divide by 100 or 10^2, move the decimal point 2 places to the left. Add zero in the tenths place.

i.e. $9.2 \div 100$ or $9.2 \div 10^2$

So, $9.2 \div 100 = 0.092$ or, $9.2 \div 10^2 = 0.092$

Exercise

1. Fill in the blanks with the appropriate number in each of the following.

a) $4.57 \times 1{,}000 =$ _____

b) $0.91 \times 10^2 =$ _____

c) $6{,}280.3 \div 10 =$ _____

d) $6.8 \times 10^3 =$ _____

e) $71.3 \times$ _____ $= 713{,}000$

f) $0.675 \times$ _____ $= 67.5$

g) $2 \div$ _____ $= 0.02$

h) $303.05 \div$ _____ $= 30.305$

i) _____ $\div 10 = 8.6$

j) _____ $\div 10^2 = 0.045$

Unit 2.3

Special Decimal Numbers

Exercise

2. Find the product of the following decimal numbers.

a) 0.249×100

b) 736.20 by 10^3

c) 61.35 and 1,000

d) 0.0904×10

e) $10^4 \times 2.22$

f) $1{,}000 \times 0.785$

3. Find the quotient of the following decimal numbers.

a) $415.2 \div 10^2$

b) $7.654 \div 1{,}000$

c) $5{,}218.75 \div 10^3$

d) $8 \div 100$

e) 31.013 by 1,000

f) 620.25 by 10^2

Unit 2.3

Special Decimal Numbers

Exercise

Solve the problems below.

4. How many zeros would you need to divide 7.5 by 10^3? Show your work.

5. 1 km is equivalent to 0.62 mile. Multiply 0.62 × 1,000 to convert 1,000 kilometers to miles.

6. If 5 g = 0.005 kg, express 4 kg 8 g in kg.

   a) 4.8 kg b) 4.08 kg

   c) 4.008 kg d) 4.0008 kg

7. How many places to the right would you move the decimal point to find the product by 100,000? Explain with an example.

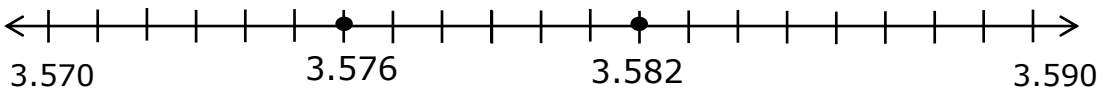
Unit 2.4

Order Decimals

Example

If American cockroach has 3.576 centimeters and Australian cockroach has 3.582 centimeters, which cockroach has the greater length?

One way to compare decimal is use a number line. i.e.



3.582 is right to 3.576 on the number line. So, 3.582 > 3.576

Another way is line the numbers up so their decimal points align.

3.576
3.582

Compare the digits from left to right. i.e. 3 = 3, 5 = 5, 7 < 8

So, 3.576 < 3.582 or, 3.582 > 3.576

So, Australian cockroach has greater length than American cockroach.

Write in ascending and descending order: 54.107, 54.701, and 54.170

Here, the digits in tens place and ones place are same. But in the tenths place, the digits are different with 7 > 1. So, 54.701 is the largest of all three numbers. Similarly, 54.170 > 54.107

∴ Ascending order is 54.107<54.170<54.701 or, 54.107, 54.170, 54.701
Descending order is 54.701>54.170>54.107 or, 54.701, 54.170, 54.107

Exercise

1. Compare the following using '<', '>', or '='.

a) 9.213 _____ 9.312

b) 7.5 _____ 7.500

c) 62.44 _____ 62.441

d) 8.45 _____ 8.045

e) 4.19 _____ 4.192

f) 101.2 _____ 101

g) 0.5132 _____ 0.5531

h) 0.0020 _____ 0.0200

Unit 2.4

Order Decimals

Exercise

2. Which one is the greatest?

a) 95.59 and 59.95

b) 78.78 and 78.87

c) 110.11, 101.92, 110.920

d) 123.456, 123.465, 123.546

3. Which one is the smallest?

a) 10.9 and 10.8

b) 73.54 and 73.56

c) 32.567, 32.576, 32.657

d) 111.1, 111.12, 111.13

4. Arrange each of the following groups of numbers in ascending order.

a) 50.102, 50.201, 50.101 ⇨

b) 707.342, 707.243, 707.324 ⇨

c) 0.062, 0.060, 0.0623, 0.0066 ⇨

d) 14.193, 14.209, 14.1931, 14.2001 ⇨

5. Arrange each of the following groups of numbers in descending order.

a) 340.23, 340.32, 339.9 ⇨

b) 573.98, 572.98, 573.89 ⇨

c) 9.52, 9.498, 9.521, 9.6 ⇨

d) 0.1164, 0.1084, 0.11639, 0.1171 ⇨

Unit 2.4

Order Decimals

Exercise

Solve the problems below.

6. Write any two numbers that are greater than 7.508 but less than 7.512. Explain how you find.

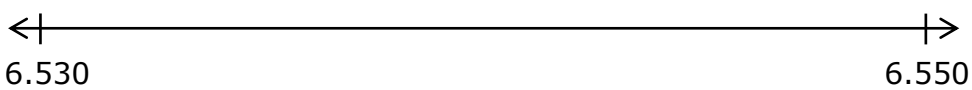
7. The length of American cockroach is 3.576 centimeters and oriental cockroach is 3.432 centimeters. Which cockroach is longer and how?

8. The circumference of a bowling ball is less than 27.002 inches. Which of the following numbers is less than 27.002?

   a) 27.2 b) 27.02

   c) 27 d) 27.004

9. Show the number 6.543, 6.534, and 6.539 on a number line and order them in ascending and descending order.



Unit 2.5

Problem Solving: Make an Organized List

Example

In a balloon game at the school fair a student gets 500 points, 300 points, and 100 points for each balloon that he (she) pops.
If Jennifer buys 3 darts, how many possible points can she score?

You can make an organized list to find all the possible scores.

Clearly, there are ten different totals possible.

500	300	100	Total
		✓✓✓	300
	✓	✓✓	500
	✓✓	✓	700
	✓✓✓		900
✓	✓	✓	900
✓		✓✓	700
✓	✓✓		1,100
✓✓		✓	1,100
✓✓	✓		1,300
✓✓✓			1,500

Exercise

1. Solve by making an organized list. The lists have been started for you. Complete the lists and answer the question.

a) Make a list to determine all the possible combinations of Pennies, Nickels, and Dimes.

P	N	D
PND		
PDN		

b) In a badminton tournament; Jerry, Samuel, Nina, and Lia will play each other once. How many games will they play?

J	S	N	L
JS JN JL			

Unit 2.5

Problem Solving: Make an Organized List

Exercise

2. Make an organized list to solve.

a) Sixth grade students Luis, Jessie, and Tyler are standing in the line at the movies. How many different ways can they line up? List the ways.

b) Darius has a quarter, a dime, a nickel, and a penny. He told his sister she could take two coins. List all the different pairs of coins his sister can take.

c) Herbert has blue pants and black pants. He also has three shirts: white, red, and yellow. List all the different outfits that Herbert can wear.

d) How many different ways can you make 15 cents using pennies, nickels, and dimes?

Unit 2.5

Problem Solving: Make an Organized List

Exercise

Solve the problems below.
Use the given tables to answer the questions.

Sandwich choice

Bread choices	Filling choices
Rye	Tuna
Wheat	Turkey
	Ham

3. How many different kinds of sandwiches can you choose if you want Rye bread?

4. How many different kinds of sandwiches can you choose if you don't want ham?

5. Suppose white bread was added as a bread choice. How many different kinds of sandwiches could you choose then?

6. Mary, Carol, Ivan, and Haden are playing tennis. How many different groups of 2 can they make?

a) 2 b) 6

c) 8 d) 12

Unit 2.6

Math Challenges

Exercise

1. Write the given numbers in Roman numerals.

a) 137

b) 650

c) 1,620

d) 2,985

2. The slowest growing tree is a white cedar in Canada. It grew about 0.0658 centimeters per year in 155 years. To what decimal place value is the yearly growth measured?

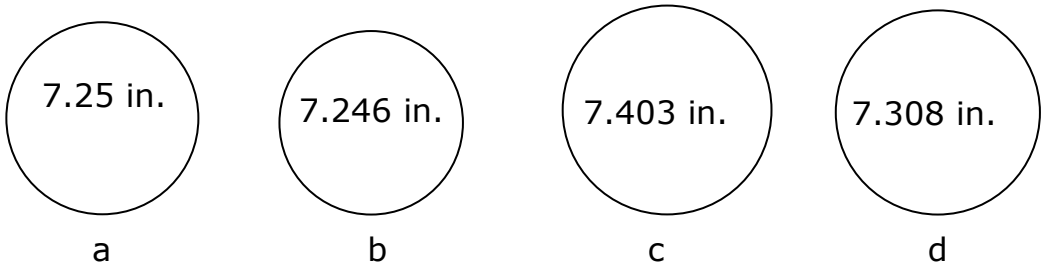
3. A bear can run at a speed of 54.078 km/hr. How would his speed change, if you removed the decimal point from a number? Explain.

4. Explain with examples how to move the decimal point when you are multiplying or dividing by a power of 10.

Math Challenges

Exercise

5. Which circle has the greatest circumference? How do you know?



6. How would you find three decimals greater than 1.44 but less than 1.45?

7. How could you find the number of different combinations of 7 letters in a computer password?

8. How many different ways can you make 25 cents using Pennies, Nickels, Dimes, and Quarters? Make an organized list to solve.

Congratulations!

You have finished a lesson. You should be very proud of yourself.
Now it is time to progress to the next lesson.
Your next assignment is notated by a green arrow.

Lesson 1 Number Concepts Part I
Lesson 2 Number Concepts Part II
Lesson 3 Introduction to Algebra
- Unit 3.1 Writing Variable Expressions
- Unit 3.2 Operations Properties
- Unit 3.3 Order of Operations
- Unit 3.4 Distributive Property
- Unit 3.5 Math Challenges

Lesson 4 Steps toward Algebra
Review 1 Review of Lesson 1, 2, 3, and 4
Lesson 5 Decimal Arithmetic
Lesson 6 More Advanced Decimal Concepts
Lesson 7 Steps toward Algebra: Solving Equations
Lesson 8 Introduction to Fraction Concepts
Review 2 Review of Lesson 5, 6, 7, and 8
Lesson 9 Number Types
Lesson 10 Arithmetic of Fractions and Mixed Numbers Part I
Lesson 11 Arithmetic of Fractions and Mixed Numbers Part II
Lesson 12 Arithmetic of Fractions and Mixed Numbers Part III
Review 3 Review of Lesson 9, 10, 11, and 12
Lesson 13 Counting Numbers (Z) Part I
Lesson 14 Counting Numbers (Z) Part II
Lesson 15 Two Dimensional Figures Part I
Lesson 16 Two Dimensional Figures Part II
Review 4 Review of Lesson 13, 14, 15, and 16
Lesson 17 Ratios, Rates, and Proportions
Lesson 18 Solving Proportions
Lesson 19 Working with Percents
Lesson 20 Solving Percentage Problems
Review 5 Review of Lesson 17, 18, 19, and 20
Lesson 21 Working with Equations and Graphs
Lesson 22 Measurement
Lesson 23 Two-Dimensional Measurement Formulae
Lesson 24 Three-Dimensional Measurement Formulae
Review 6 Review of Lesson 21, 22, 23, and 24
Lesson 25 Graphs and Data
Lesson 26 Introduction to Statistics
Lesson 27 Probability
Review of Lesson 1 to 14
Review of Lesson 15 to 27

Grade 6

Answer Key of Lesson 2

Unit 2.1

1. a) D b) E c) F d) C e) B f) A
2. a) VII b) XXIII c) XLVII d) LXXXIX e) XCIII f) XXXVIII
3. a) 9 b) 22 c) 14 d) 8 e) 20 f) 15
   g) 53 h) 27 i) 36
4. a) 2 b) 8 c) not d) 15 e) 24 f) not
5. a) VI b) X c) L d) VII
6. Tess 7.b
8. a) B b) D c) C d) A

Unit 2.2

1. a) tenth; 3 tenth
   b) thousandth; 1 thousandth
   c) ones; 9 ones
   d) thousandth; 4 thousandth
   e) hundredth; 0 hundredth
   f) hundredth; 7 hundredth
2. a) 0.0028
   b) 5.21965
   c) thirty-seven and two hundred eighty-one thousandth
   d) 699 and 5003 ten thousandth
   e) 10+4+0.5+0.0003
   f) 7.73
   g) 84.1748
   h) one and ninety-seven hundredth and fifty-three thousandth
   i) 200+60+1+0.03+0.005
   j) 945 and 107 thousandth
3. hundred thousandth
4. Twenty-one and fifth; 20+1+0.5
5. d
6. 3 and 438 thousandth; 3+0.4+0.03+0.008

Unit 2.3

1. a) 4,570 b) 91 c) 628.03 d) 6,800 e) 10^4 f) 100
   g) 100 h) 10 i) 86 j) 4.5
2. a) 24.9 b) 736,200 c) 61,350 d) 0.904 e) 22,200 f) 785
3. a) 4.152 b) 0.007654 c) 5.21875 d) 0.08 e) 0.031013 f) 6.2025
4. 0.0075 5. 620 miles 6. c 7. 5 points

Unit 2.4

1. a) < b) = c) < d) > e) < f) >
   g) < h) <
2. a) 95.59 b) 78.87 c) 111.920 d) 123.546
3. a) 10.8 b) 73.54 c) 32.567 d) 111.1
4. a) 50.101; 50.102; 50.201
   b) 707.243; 707.324; 707.342
   c) 0.0066; 0.060; 0.062; 0.0623
   d) 14.193; 14.1931; 14.2001; 14.209
5. a) 340.32; 340.23; 339.9
   b) 573.98; 573.89; 572.98
   c) 9.6; 9.521; 9.5; 9.498
   d) 0.1171; 0.1164; 0.11639; 0.1084
7. American; 0.144
8. d
9. 6.534, 6.539, 6.543; 6.543, 6.539, 6.534

Unit 2.5

1. a)

P	N	P
PND	NDP	DNP
PDN	NDP	DPN

6 ways

b.

J	S	N	L
JS	SN	NL	
JN	SL		
JL			

6 games

2. a) 6 ways; Luis, Jessie, Tyler; Luis, Tyler, Jessie
   Jessie, Luis, Tyler; Jessie, Tyler, Luis
   Tyler, Jennie, Luis; Tyler, Luis, Jessie

b) 6 ways; QD, QN, QP, DN, DP, NP
c) 6: blue-white; blue-red; blue-yellow; black-white; black -red; black-yellow
d) 0, 1, 1; 5, 2, 0; 10, 1, 0

3. 3 kinds

4. 2 kinds

5. 9 kinds

6. b

Unit 2.6

1. a) CXXXVII

   b) DCL

   c) MDCXX

   d) MMCMLXXXV

2. 6.58 cm

5. c

7. 5,040 ways

8.

P	N	D	Q
0	0	0	1
25	0	0	0
0	1	2	0
5	4	0	0
0	5	0	0
10	1	1	0
15	0	1	0
20	1	0	0