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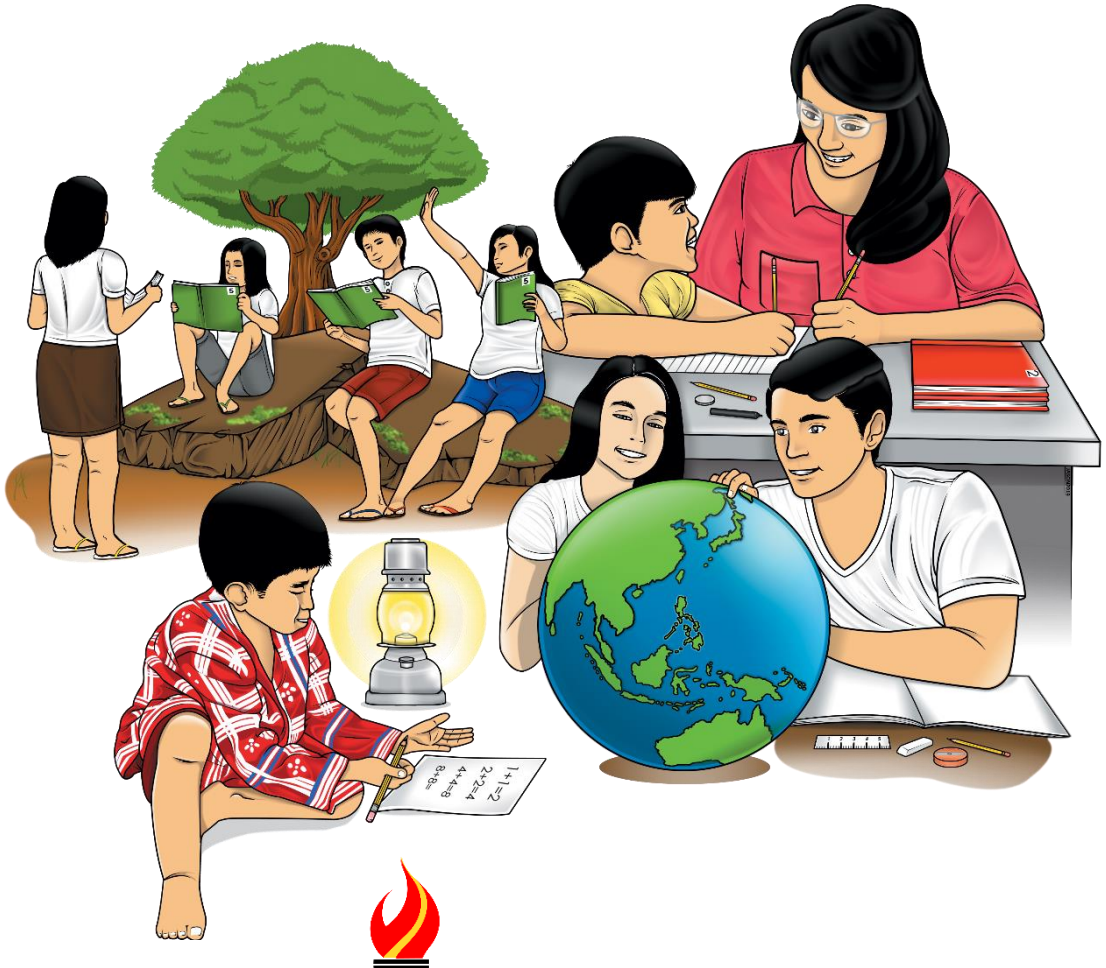
Mathematics

Quarter 1 – Module 5: Expressing Rational Numbers from Fraction Form to Decimal Form and Vice-versa



ALTERNATIVE DELIVERY MODE
ADM

Science – Grade 7
Alternative Delivery Mode
Quarter 1 – Module 1: Expressing Rational Numbers from Fraction Form to Decimal Form and Vice-versa
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Introductory Message

For the facilitator:

Welcome to the Mathematics 7 Alternative Delivery Mode (ADM) Module on Expressing Rational Numbers from Fraction Form to Decimal Form and Vice-versa!

This module was collaboratively designed, developed and reviewed by educators both from public and private institutions to assist you, the teacher or facilitator in helping the learners meet the standards set by the K to 12 Curriculum while overcoming their personal, social, and economic constraints in schooling.

This learning resource hopes to engage the learners into guided and independent learning activities at their own pace and time. Furthermore, this also aims to help learners acquire the needed 21st century skills while taking into consideration their needs and circumstances.

In addition to the material in the main text, you will also see this box in the body of the module:

Notes to the Teacher

This contains helpful tips or strategies that will help you in guiding the learners.

As a facilitator you are expected to orient the learners on how to use this module. You also need to keep track of the learners' progress while allowing them to manage their own learning. Furthermore, you are expected to encourage and assist the learners as they do the tasks included in the module.

For the learner:

Welcome to the Mathematics 7 Alternative Delivery Mode (ADM) Module on Expressing Rational Numbers from Fraction Form to Decimal Form and Vice-versa!

The hand is one of the most symbolized part of the human body. It is often used to depict skill, action and purpose. Through our hands we may learn, create and accomplish. Hence, the hand in this learning resource signifies that you as a learner is capable and empowered to successfully achieve the relevant competencies and skills at your own pace and time. Your academic success lies in your own hands!

This module was designed to provide you with fun and meaningful opportunities for guided and independent learning at your own pace and time. You will be enabled to process the contents of the learning resource while being an active learner.

This module has the following parts and corresponding icons:

 ***What I Need to Know***	This will give you an idea of the skills or competencies you are expected to learn in the module.
 ***What I Know***	This part includes an activity that aims to check what you already know about the lesson to take. If you get all the answers correct (100%), you may decide to skip this module.
 ***What's In***	This is a brief drill or review to help you link the current lesson with the previous one.
 ***What's New***	In this portion, the new lesson will be introduced to you in various ways such as a story, a song, a poem, a problem opener, an activity or a situation.
 ***What is It***	This section provides a brief discussion of the lesson. This aims to help you discover and understand new concepts and skills.
 ***What's More***	This comprises activities for independent practice to solidify your understanding and skills of the topic. You may check the answers to the exercises using the Answer Key at the end of the module.
 ***What I Have Learned***	This includes questions or blank sentence/paragraph to be filled in to process what you learned from the lesson.
 ***What I Can Do***	This section provides an activity which will help you transfer your new knowledge or skill into real life situations or concerns.

	***Assessment***	This is a task which aims to evaluate your level of mastery in achieving the learning competency.
	***Additional Activities***	In this portion, another activity will be given to you to enrich your knowledge or skill of the lesson learned. This also tends retention of learned concepts.
	***Answer Key***	This contains answers to all activities in the module.

At the end of this module you will also find:

References	This is a list of all sources used in developing this module.

The following are some reminders in using this module:

1. Use the module with care. Do not put unnecessary mark/s on any part of the module. Use a separate sheet of paper in answering the exercises.
2. Don't forget to answer *What I Know* before moving on to the other activities included in the module.
3. Read the instruction carefully before doing each task.
4. Observe honesty and integrity in doing the tasks and checking your answers.
5. Finish the task at hand before proceeding to the next.
6. Return this module to your teacher/facilitator once you are through with it.

If you encounter any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator. Always bear in mind that you are not alone.

We hope that through this material, you will experience meaningful learning and gain deep understanding of the relevant competencies. You can do it!

What I Need to Know

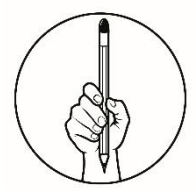
This module was designed and written with you in mind. It is here to help you master the process of expressing rational numbers from decimals to fractions and vice-versa. The scope of this module permits it to be used in many different learning situations. The language used recognizes the diverse vocabulary level of students. The lessons are arranged to follow the standard sequence of the course. But the order in which you read them can be changed to correspond with the textbook you are now using.

The module contains:

- Lesson on expressing Rational numbers from Fraction form to Decimal form and vice-versa.

After going through this module, you are expected to:

1. Express Rational numbers from Fraction form to Decimal form
2. Express Rational numbers from Decimal form to Fraction form



What I Know

Choose the letter of the best answer. Write the chosen letter on a separate sheet of paper.

1. It represents equal parts of a whole or a collection.
    a. decimal
    b. fraction
    c. set
    d. percent

2. It is a number whose whole number part and the fractional part is separated by a decimal point.
    a. decimal
    b. fraction
    c. set
    d. percent

3. It is a point or dot we use to separate the whole number part from the fractional part of a decimal number.
    a. fraction form
    b. percentage
    c. decimal point
    d. set of point

4. The first place to the right of the decimal point in a number.
    a. ones
    b. tenths
    c. hundredths
    d. thousandths

5. The second place to the right of the decimal point in a number.
    a. ones
    b. tenths
    c. hundredths
    d. thousandths

6. Express 0.25 to fraction.
    a. $\frac{1}{2}$
    b. $\frac{1}{3}$

c. $\frac{1}{4}$

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

7. Express $\frac{1}{2}$ to decimal form.
   a. 0.75
   b. 0.25
   c. 0.125
   d. 0.50

8. Express 0.75 to fraction.
   a. $\frac{3}{4}$
   b. $\frac{1}{2}$
   c. $\frac{2}{3}$
   d. $\frac{1}{4}$

9. Express $\frac{1}{4}$ to decimal form.
   a. 0.25
   b. 0.50
   c. 0.125
   d. 0.75

10. Express $\frac{1}{8}$ to decimal form.
    a. 0.75
    b. 0.25
    c. 0.125
    d. 0.50

Lesson 1 Expressing Rational Numbers from Fraction form to Decimal form and Vice-Versa

What's In

This module is a continuation of the concepts on Operations on Integers and on greatest common factors. Mastering the rules in the previous module will speed you in completing this module. Let's check your learning!

Greatest Common Factor (GCF)

A. Find the greatest common factor of the two numbers:

1. 7 and 14 _____
2. 12 and 32 _____
3. 9 and 21 _____
4. 10 and 45 _____
5. 4 and 28 _____

Operations on Integers

B. Perform the indicated operations on integers.

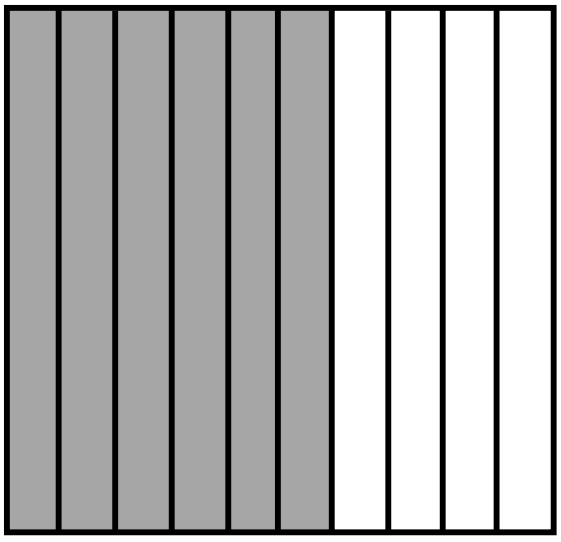
6. (-7) + (+2) = _____
7. (-7) – (-3) = _____
8. (+8) x (+3) = _____
9. (+3) x (-1) = _____
10. (-3) ÷ (+3) = _____

What's New

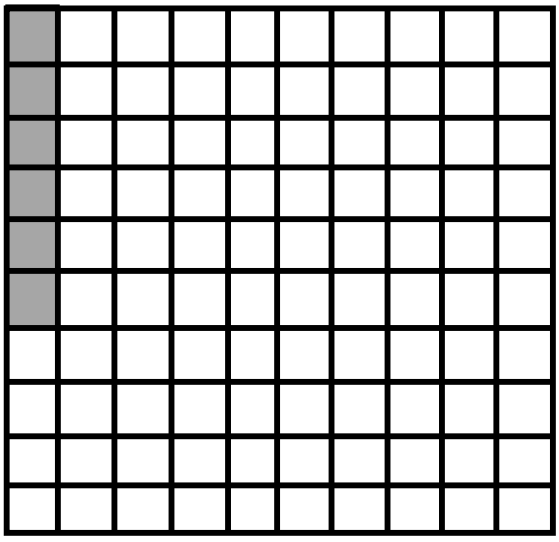
In our previous lesson, we learned about fraction and decimal, we also learned how to perform operations on integers, and we learned how to find the greatest common factor (GCF). Now, we can use them in expressing Rational numbers from Fraction form to Decimal form and vice-versa.

Here's an example of how the fractional part can be converted into decimals.

	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
$25\frac{6}{10}$		2	5	•	6		
$25\frac{6}{100}$		2	5	•	0	6	
$25\frac{6}{1000}$		2	5	•	0	0	6



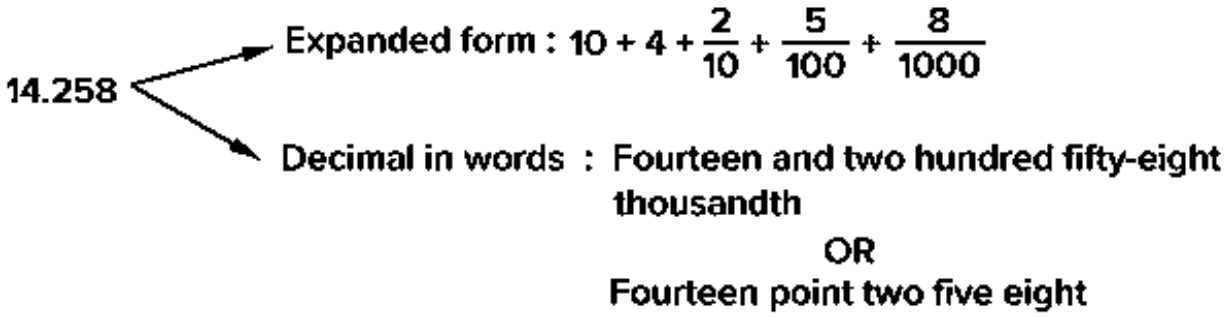
$\frac{6}{10}$ or 0.6 or Six Tenths



$\frac{6}{100}$ or 0.06 or Six Hundredths

$\frac{6}{1000}$ or 0.006 or Six Thousandths

Decimal numbers can be written both in expanded form and in words.



The whole number part and the fractional part of a Decimal number is separated by a decimal point.

What is It

Throughout the discussion, let us express the Rational numbers from Fraction form to Decimal form and vice-versa. There are some steps that you may follow.

To express fraction to decimal form, follow these steps:

- **Step 1**: Find a number you can multiply by the bottom of the fraction to make it 10, or 100, or 1000, or any 1 followed by 0s.
- **Step 2**: Multiply both top and bottom by that number.
- **Step 3**. Then write down just the top number, putting the decimal point in the correct spot (one space from the right hand side for every zero in the bottom number)

Example 1: Express $\frac{3}{4}$ to Decimal form

Step 1: We can multiply 4 by 25 to become 100

Step 2: Multiply top and bottom by 25:

$$\frac{3}{4} \overset{\times 25}{=} \frac{75}{100}$$

Step 3: Write down 75 with the decimal point 2 spaces from the right (because 100 has 2 zeros);

Answer: $\frac{3}{4} = 0.75$

Example 2: Express $\frac{1}{3}$ to Decimal form

Step 1: There is no way to multiply 3 to become 10 or 100 or any "1 followed by 0s", but we can calculate an **approximate** decimal by choosing to multiply by, say, 333

Step 2: Multiply top and bottom by 333:

$$\frac{1}{3} \overset{\times 333}{=} \frac{333}{999}$$

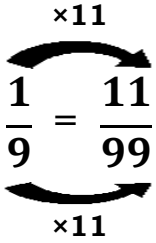
Step 3: Now, **999 is *nearly* 1,000**, so let us write down 333 with the decimal point 3 spaces from the right (because 1,000 has 3 zeros):

Answer: $\frac{1}{3}$ = 0.333 (accurate to only 3 decimal places!!)

Example 3: Express $\frac{1}{9}$ to Decimal form

Step 1: There is no way to multiply 9 to become 10 or 100 or any "1 followed by 0s", but we can calculate an **approximate** decimal by choosing to multiply by, say, 11

Step 2: Multiply top and bottom by 11:



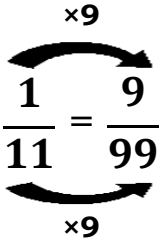
Step 3: Now, **99 is *nearly* 100**, so let us write down 11 with the decimal point 2 spaces from the right (because 100 has 2 zeros):

Answer: $\frac{1}{9}$ = 0.11 (accurate to only 2 decimal places!!)

Example 4: Express $\frac{1}{11}$ to Decimal form

Step 1: There is no way to multiply 11 to become 10 or 100 or any "1 followed by 0s", but we can calculate an **approximate** decimal by choosing to multiply by, say, 9

Step 2: Multiply top and bottom by 9:



Step 3: Now, **99 is *nearly* 100**, so let us write down 09 with the decimal point 2 spaces from the right (because 100 has 2 zeros):

Answer: $\frac{1}{11}$ = 0.09 (accurate to only 2 decimal places!!)

To express a Decimal number to a Fraction, follow these steps:

- **Step 1:** Write down the decimal divided by 1, like this: $\frac{\text{decimal}}{\mathbf{1}}$
- **Step 2:** Multiply both top and bottom by 10 for every number after the decimal point. (For example, if there are two numbers after the decimal point, then use 100, if there are three then use 1000, etc.)
- **Step 3:** Simplify (or reduce) the fraction

Example 1: Express 0.75 to fraction

Step 1: Write down 0.75 divided by 1:

$$\frac{0.75}{\mathbf{1}}$$

Step 2: Multiply both top and bottom by **100** (because there are 2 digits after the decimal point so that is 10×10=100):

$$\frac{\mathbf{0.75}}{\mathbf{1}} = \frac{\mathbf{75}}{\mathbf{100}}$$

(× 100 above, × 100 below)

(Turns you see how it turns the top number into a whole number?)

Step 3: Simplify the fraction by dividing 5 both top and bottom (this took me two steps):

(1st step) (2nd step)

$$\frac{\mathbf{75}}{\mathbf{100}} = \frac{\mathbf{15}}{\mathbf{20}} \longrightarrow \frac{\mathbf{15}}{\mathbf{20}} = \frac{\mathbf{3}}{\mathbf{4}}$$

÷5 ÷5 ÷5 ÷5

Answer: 0.75 = $\frac{3}{4}$

or

We can simply get the Greatest Common Factor (GCF) of 75 and 100. Just follow these steps:

Step 1: List the multiple of 75 and 100 and find their GCF;

75 = 1, 3, 5, 15, (25), 75

100 = 1, 2, 4, 5, 10, 20, (25), 50, 100

Step 2: Simplify the fraction by dividing their GCF;

$$\frac{75}{100} \div \frac{25}{25} = \frac{3}{4}$$

Answer: 0.75 = $\frac{3}{4}$

*Note: 75/100 is called a **decimal fraction** and 3/4 is called a **common fraction**!*

When there is a whole number part, put the whole number aside and bring it back at the end:

Example 2: Express 2.35 to a fraction

Put the 2 aside and just work on 0.35

Step 1: write down:

$$\frac{0.35}{1}$$

Step 2: multiply both top and bottom by **100** (2 digits after the decimal point so that is 10×10=100):

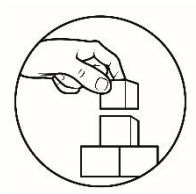
$$\frac{35}{100}$$

Step 3: Simplify the fraction by dividing their GCF (supposed our GCF of 35 and 100 is 5):

$$\frac{35}{100} \overset{\div 5}{=} \frac{7}{20}$$

Bring back the 2 (to make a mixed fraction):

Answer: 2.35 = $\mathbf{2\frac{7}{20}}$



What's More

A. Express each Fraction in Decimal form. Round off your answers into thousandths place.

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

2. $\frac{21}{6}$

3. $\frac{4}{29}$

4. $\frac{11}{316}$

5. $\frac{2}{37}$

B. Express each Decimal number in Fraction in lowest terms or a mixed number in simple form.

6. 0.15
7. 0.225
8. 2.33
9. 9.08
10. 4.404

What I Have Learned

Fill in the blanks. Refer your answer on the box below.

divided by	decimal point	fraction	
top	multiply	10	Simplify
decimal point	fraction	bottom	

To express a Fraction to a Decimal, follow these steps:

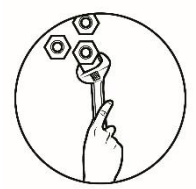
Step 1: Find a number you can ___(1)___ by the bottom of the ____(2)____ to make it 10, or 100, or 1000, or any 1 followed by 0s.

Step 2: Multiply both ____(3)____ and ____(4)____ by that number.

Step 3. Then write down just the top number, putting the ____(5)____ in the correct spot (one space from the right hand side for every zero in the bottom number)

To express a Decimal to a Fraction, follow these steps:

- **Step 1:** Write down the decimal ___(6)___ 1, like this: $\frac{\text{decimal}}{\mathbf{1}}$
- **Step 2:** Multiply both top and bottom by ____(7)____ for every number after the ____(8)____. (For example, if there are two numbers after the decimal point, then use 100, if there are three then use 1000, etc.)
- **Step 3:** ____(9)____ (or reduce) the ____(10)____.



What I Can Do

Express the Rational numbers from Fraction form to Decimal form and vice versa.

1. What is 0.75 in fraction?

2. What is 2.333 in fraction?

3. Hailey rode her bike $\frac{4}{5}$ of a mile to the nature park. What is the distance she rode her bike as a decimal number?

4. Sarah took $\frac{2}{4}$ of the ham and pineapple pizza. How much of the pizza did Sarah take written as a decimal number?

5. Erik got $\frac{1}{2}$ of the questions correct on the test. How is that fraction written as a decimal number?

Assessment

Fraction into Decimal

A. Express each Fraction into Decimal form. Round off your answers into thousandths place.

1.) $\frac{13}{5} =$ ☐

2.) $\frac{4}{21} =$ ☐

3.) $\frac{2}{13} =$ ☐

4.) $\frac{5}{35} =$ ☐

5.) $\frac{12}{19} =$ ☐

6.) $\frac{28}{521} =$ ☐

7.) $\frac{31}{163} =$ ☐

8.) $\frac{25}{16} =$ ☐

9.) $\frac{17}{11} =$ ☐

10.) $\frac{124}{117} =$ ☐

Decimal into Fraction

B. Express each Decimal into Fraction form:

1.) 0.6 = ☐

2.) 4.3 = ☐

3.) 0.22 = ☐

4.) 5.2 = ☐

5.) 0.1 = ☐

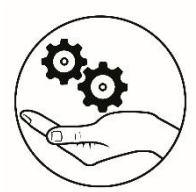
6.) 0.3 = ☐

7.) 1.5 = ☐

8.) 0.2 = ☐

9.) 2.3 = ☐

10.) 2.5 = ☐



Additional Activities

A. Express the Fractions to Decimals forms. Round off your answers to hundredths place.

1.) $\frac{2}{6} =$

2.) $\frac{1}{2} =$

3.) $\frac{2}{5} =$

4.) $\frac{3}{4} =$

5.) $\frac{3}{5} =$

B. Express the Decimals numbers to Fraction form.

1.) 0.83 =

2.) 0.4 =

3.) 0.24 =

4.) 0.96 =

5.) 0.6 =

Additional Activities

A.
6.) 0.33
7.) 0.50
8.) 0.40
9.) 0.75
10.) 0.60

B.
6.) 83/100
7.) 2/5
8.) 6/25
9.) 24/25
10.) 3/5

What I Know

1. b
2. a
3. c
4. b
5. c
6. c
7. d
8. a
9. a
10. c

What I Can Do

1. ¾
2. 2 1/3
3. 0.8
4. 0.5
5. 0.5

What's More

1. 0.750
2. 3.500
3. 0.138
4. 0.035
5. 0.054
6. 3/20
7. 9/40
8. 2 1/3
9. 9 2/25
10. 4 101/250

What I have learned

A.
1. multiply
2. fraction
3. top
4. bottom
5. decimal point
6. divided by
7. 10
8. decimal point
9. simplify
10. fraction

Assessment

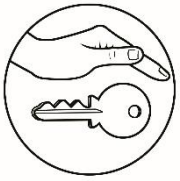
A.
1. 2.600
2. 0.190
3. 0.154
4. 0.143
5. 0.632
6. 0.054
7. 0.190
8. 1.563
9. 1.545
10. 1.060

B.
1. 3/5
2. 4 3/10
3. 11/50
4. 5 1/5
5. 1/10
6. 3/10
7. 1 ½
8. 1/5
9. 2 3/10
10. 2 ½

What's In

A.
1.) 7
2.) 4
3.) 3
4.) 5
5.) 4

B.
6.) -5
7.) -4
8.) 24
9.) -3
10.) -1



Answer Key

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