Teaching Decimal Magnitudes

"By Thinking Money"

Resource Packet

Resource Prepared for use with Video On:

Teaching Decimal Magnitudes

by

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Recommended Grade Level Use: 4th Grade and Up

Video (free download) at: www.thenew3rseducationconsulting.com

Teaching Decimal Magnitudes

"By Thinking Money"

Table of Contents

Resource Recommendations for Effective Use

My video series will clarify the pedagogical process so that many common missteps are avoided, and teachers of all experience levels are successful and effective with the implementation of curricular resources. In my 30 years of public education experience, I have seen many efficiently and effectively designed Tier 1, Tier 2 and Tier 3 curricular resources and pedagogy **not work** due to user-error and inefficient classroom routines and student management – either in an individual classroom or school-wide programming. If there is one curricular criticism comment that I have heard repeatedly, it is the following: *"That program or curricular resource does not work with my students."* Then, in response to that negative critique, I followed-up and observed both the curricular resource's implementation as well as the classroom quality controls. Invariably, I arrive at the conclusion, *"Of course, the curricular resource or program was not effective – the cause – poorly designed implementation, lack of required consistency and insufficient student accountability."* Again, this video series provides the needed steps to rectify or greatly lessen many of these issues.

In general, the video series in math, science and literacy will focus on the four (4) primary phases of 'student learning' and 'pedagogy' that must be addressed to produce consistent and sustained student outcomes.

First, skill or process lesson design must be sequenced from **tactile** lessons as new concepts are introduced and transition to **pictorial** representation lessons. After the tactile and pictorial stages are student mastered, the lesson design transitions to a **paper-pencil** formatted structure. In short, daily core lessons begin with a concrete stage and/or pictorial stage and end in a paper-pencil structure depending on the concept and the grade level.

Second, there must be a **threshold number of repetitions** to master a skill or process. There are varying means of spiraling instruction to accomplish the threshold repetition limits, but if the objective is to ingrain the skill into long-term memory, repeated exposure is a necessity. For students classified as 'general education' scholars, the range is between 8 to 16 iterations to master a skill or process. However, if the student is receiving special education services, then the minimum required repetitions may vary widely. In those situations, a student's defined disability must be taken into account as well as the student's Individual Education Plan (IEP).

Third, there is always a **sequencing hierarchy in skill development** since skills must be learned in a specific order, or the majority of students will be cognitively overwhelmed. For example, a student should possess whole number line mastery prior to learning to 'round' whole numbers to the nearest 10, 100 or thousand. These prerequisite skills should be taken into consideration so the student is not trying to learn both the prerequisite skills and the dependent skills simultaneously.

Fourth, the **pedagogical spiraling mechanism** to achieve the threshold number of repetitions is difficult for teachers of any experience level. There is a teaching method entitled 'spaced repetition' that efficiently and effectively addresses this situation. That technique will be the subject of a future video. However, this resource packet is intended to provide a classroom teacher with most of the prerequisite skills, processing skills and their sequencing referenced in the video; consequently, only the repetition pedagogy remains an open question.

Each of the prerequisite or core skills referenced in the video are detailed below from either the pictorial or paper-pencil stage of lesson design and student learning. Finally, teachers MUST practice the skills sufficiently to aptly prepare students for the student assessment. All too often the lack of student learning and subsequent content mastery in many teachers' classrooms are a result of insufficient practice opportunities.

Curricular Resources Included for this Video

1.) Between What Two Whole Numbers (V1 and V2) – This skill exercise requires students to find the two whole numbers that bookend the decimal number. Students will quickly know the **approximate** size of the decimal regardless of the number of digits to the right of the decimal point. It is imperative that students understand that only the first two digits (i.e., the tenths and the hundredths place) to the right of the decimal point influence the decimal's 'rough or ballpark' magnitude. The remaining digits – from the thousandths place onward to the right are too small to materially affect the decimal number's overall size. Thus, students can view decimal numbers as money, and use and view only the first two decimal digits to approximate its overall magnitude.

For example, given the decimal number 2.5693, let's examine and approximate its magnitude.

- The decimal number is between the whole numbers 2 and 3.

- The '5' is equal to a value of $^{5}/_{10}$ – meaning 5 out of a total of 10 boxes are shaded on a ten grid, and the '6' is equivalent to a value of $^{6}/_{100}$ – meaning 6 out of 100 boxes are shaded on a hundred grid. These individual values are significant – material in the size of the decimal number.

- The '9' is equal to a place value of $^{9}/_{1,000}$ – meaning **only** 9 boxes are shaded out of a total of 1,000 on a thousand grid. Moreover, the '3' is equivalent to the place value of $^{3}/_{10,000}$ – whereas, **only** 3 boxes are shaded out of a total of 10,000 – both these decimal digits in the thousandths and ten-thousandths' places (and equivalent fractions) are relatively close to zero. Thus, after the hundredths place, each corresponding digit to the right is not material in value to influence the **overall size** of the decimal, 2.5693.

- Consequently, the decimal number 2.5693 possess an **approximate** size of about 2.56 (i.e., $2\ ^{56}/_{100}$ as a mixed number) if viewing the decimal number as 'money.' Thus, both the '5' and the '6' in the decimal are relatively large in comparisons to the other corresponding digits further to the right of the hundredths digit. ***In short, the tenths and hundredths digits dominate the overall magnitude size of a decimal number.***

- In my many years of classroom teaching and administrative professional development work, this type of explanation presented above to 4th, 5th, and 6th grade students for 3 to 4 days cements this decimal number thinking. Additionally, students must sufficiently practice the math skills in this video to ingrain this mathematical thinking into long-term memory. Then and only then, students understand decimal magnitudes via 'money' both pragmatically and conceptually.

Please watch the video entitled, *"Fraction and Decimal Equivalency Pedagogy"* housed on the website address provided in the footer below. That video provides more conceptual examples, content and pedagogy that may be needed in this mathematical area.

It is important to note that – upon initial exposure to decimals or fractions – the majority of students will **not** know the *two ending whole numbers between* a mixed number or a decimal (e.g., 8 ½ *or* 8.50 *or* $8\ ^{5}/_{10}$ *or* $8\ ^{50}/_{100}$ is between the two whole numbers 8 and 9).

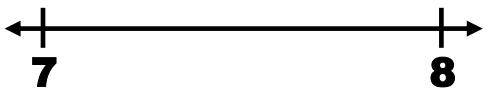
For example, if the teacher asks students to write the two whole numbers that proper fractions, decimals, or mixed numbers {e.g., ¼, $^{25}/_{100}$, 0.25, 5.75, 5 ¾, or 5 $^{75}/_{100}$} are between, **they will not know**. However, if the teacher practices with students for approximately 3 to 4 days in short, rapid mini-lessons prior to the daily core lesson each day, they become very adept. This fraction-decimal understanding is an essential numeracy builder as students begin to comprehend the physical meaning and magnitudes of larger mixed numbers (19 $^{456}/_{1,000}$) and decimals (15.0934).

Numerical example:

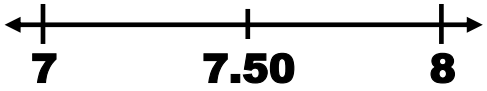
After writing 7.25 on the white board, the teacher states, *"Students, what two whole numbers is that decimal between?"* Students should write 7 and 8. Then, number lines are drawn indicating quarter points as shown below. This exercise will securely cement students' decimal and fraction numeracy ability within the context of magnitudes and physical location of each number type on a number line.

2.) Plotting Decimals – Magnitude Numeracy Level 1 (V1 – V3) There are three different versions (V1, V2 and V3) of this exercise to provide ample student practice. However, the teacher must follow-up with rapid quick mini-lessons in subsequent days for all students to fully master the content. It is imperative that each day during the spiraling mini-lessons that the teacher require students to quickly draw the number line in quarters. Students become very capable at drawing quarter point number lines for decimals because they learn that they are always finding midpoints. Thus, for instance, they are locating the midpoint one-half (½) between zero (0) and 1 whole, and the mid-point between zero (0) and ½ - or one-fourth/one-quarter (¼) as well as the midpoint ¾ between one-half (½) and 1 whole.

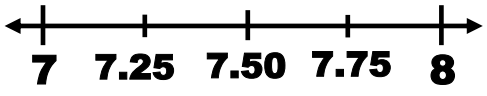
For example, the teacher may say to their students as he or she draws a number line concurrently, *"Draw a number line with 7 and 8 as the beginning and ending whole numbers."*



Next, the teacher can say, *"Find half-way point between 7 and 8 and label it on the number line."*

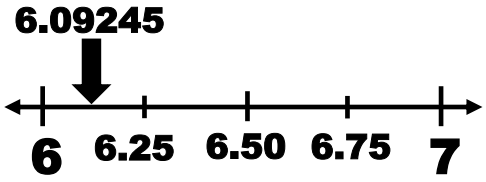


Repeat the process to locate the midpoints or quarter point locations of 7 ¼ (7.25) and 7 ¾ between 7 and 7 ½, as well as 7 ½ and 8, respectively. Interchange practice sessions with decimals less than 1.00, when the whole numbers are zero (0) and 1 whole.



This exercise is a continuation of the "Between What Two Whole Numbers" above except that students plot the decimal based on its **approximate** size. It is imperative that students understand the approximation of the decimal using money (the first two digits after the decimal point) to provide them the physical location on the number line; however, they MUST write the actual decimal on the number line – NOT THE APPROXIMATE VALUE.

Example: Given 6.09245 as a decimal number. (**Note:** Use larger decimal digits to teach this concept because it drives the point home to students on decimal magnitudes, it takes away the mystery of decimal numbers, and the decimals to the thousandths place are much easier to them in comparison at that point.) First, the decimal is between the whole numbers 6 and 7, and its APPROXIMATE value is 6.09. Thus, the student draws the number line in quarters and plots the decimal 6.09, **but the student writes** 6.09245…**NOT** 6.09. Again, the 6.09 approximation is needed for students to pragmatically understand the material (overall) size of the decimal number.



3.) Understanding Decimal Magnitudes Level 2 (V1 – V3) Again, there are three different versions (V1, V2 and V3) of this exercise to provide ample student practice. As stated before, the teacher must follow-up with rapid quick mini-lessons in subsequent days for all students to fully master the content. It is imperative that each day during the spiraling mini-lessons that the teacher require students to quickly draw the number line in quarters. *The students will know what they practice, and they will NOT know what they do not practice.*

This exercise provides the practice to compute decimal differences between the half point and the two nearest whole numbers. Student success in this activity is dependent on the student understanding and being mathematically proficient on "Making 10, 100 and 1.00." Please watch the video entitled, "Counting UP ⬆ to *'Making 10'* " on the website address provided in the footer below. That video provides more conceptual examples, pedagogy, and student practice resources that may be needed for student mastery in this mathematical area.

4.) Plotting Decimals – Magnitude Numeracy Level 3 (V1 – V3) – On this last exercise, students connect all the above decimal elements together in a final activity. They write the whole number boundary values of the decimal number, approximate its size by viewing the decimal number as money, draw and label the number line, and plot the decimal in the correct location on that number line. Then, they compute both quarter points and whole number decimal distances from the plotted decimal number. With appropriate practice opportunities, students become very adept at this math processing skill as well as the dramatic improvement of both of their conceptual and pragmatic understanding of decimal numbers.

Find the Two Whole Numbers Between the Decimal – V1
Approximate the Decimal Size

Directions: Write the two whole numbers that are closest to the given decimal or fraction. Then, write the approximate size of the decimal. The first two problems are completed as examples.

1.) 6.2509 is between _**6**_ and _**7**_ Approximate size of decimal: _**6.25**_

2.) 3.0045 is between _**3**_ and _**4**_ Approximate size of decimal: _**3.00**_

3.) 1.07356 is between ____ and ____ Approximate size of decimal: _____

4.) 9.762 is between ____ and _____ Approximate size of decimal: _____

5.) 12.7501 is between _____ and _____ Approximate size of decimal: _____

6.) 0.392059 is between _____ and _____ Approximate size of decimal: _____

7.) 17.9810 is between _____ and _____ Approximate size of decimal: _____

8.) 16.7 is between _____ and _____ Approximate size of decimal: _____

9.) 0.25252 is between _____ and _____ Approximate size of decimal: _____

10.) 3.1644 is between _____ and _____ Approximate size of decimal: _____

11.) 5.0179 is between _____ and _____ Approximate size of decimal: _____
(Think – Difficult)

12.) 0.81022 is between _____ and _____ Approximate size of decimal: _____

13.) 59.5901 is between _____ and _____ Approximate size of decimal: _____

Find the Two Whole Numbers Between the Decimal – V1
Approximate the Decimal Size – Solutions

Directions: Write the two whole numbers that are closest to the given decimal or fraction. Then, write the approximate size of the decimal. The first two problems are completed as examples.

1.) 6.2509 is between **6** and **7** Approximate size of decimal: **6.25**

2.) 3.0045 is between **3** and **4** Approximate size of decimal: **3.00**

3.) 1.07356 is between **1** and **2** Approximate size of decimal: **1.07**

4.) 9.762 is between **9** and **10** Approximate size of decimal: **9.76**

5.) 12.7501 is between **12** and **13** Approximate size of decimal: **12.75**

6.) 0.392059 is between **0** and **1** Approximate size of decimal: **0.39**

7.) 17.9810 is between **17** and **18** Approximate size of decimal: **17.98**

8.) 16.7 is between **16** and **17** Approximate size of decimal: **16.70**

9.) 0.25252 is between **0** and **1** Approximate size of decimal: **0.25**

10.) 3.1644 is between **3** and **4** Approximate size of decimal: **3.16**

11.) 5.0179 is between **5** and **6** Approximate size of decimal: **5.02** **rounded**
(Think – Difficult)

12.) 0.81022 is between **0** and **1** Approximate size of decimal: **0.81**

13.) 59.5901 is between **59** and **60** Approximate size of decimal: **59.59**

Find the Two Whole Numbers Between the Decimal – V2
Approximate the Decimal Size

Directions: Write the two whole numbers that are closest to the given decimal or fraction. Then, write the approximate size of the decimal. The first two problems are completed as examples.

1.) 0.5206 is between **0** and **1** Approximate size of decimal: **0.52**

2.) 7.0791 is between **7** and **8** Approximate size of decimal: **7.08** rounded
(Think – Difficult)

3.) 2.093 is between ____ and ____ Approximate size of decimal: _____

4.) 4.872 is between ____ and _____ Approximate size of decimal: _____

5.) 20.7501 is between _____ and _____ Approximate size of decimal: _____

6.) 0.192009 is between _____ and _____ Approximate size of decimal: _____

7.) 14.64444 is between _____ and _____ Approximate size of decimal: _____

8.) 11.2 is between _____ and _____ Approximate size of decimal: _____

9.) 0.33333 is between _____ and _____ Approximate size of decimal: _____

10.) 2.1680 is between _____ and _____ Approximate size of decimal: _____
(Think – Difficult)

11.) 8.0453 is between _____ and _____ Approximate size of decimal: _____
(Think – Difficult)

12.) 0.3508 is between _____ and _____ Approximate size of decimal: _____

13.) 31.4101 is between _____ and _____ Approximate size of decimal: _____

Find the Two Whole Numbers Between the Decimal – V2
Approximate the Decimal Size – Solutions

Directions: Write the two whole numbers that are closest to the given decimal or fraction. Then, write the approximate size of the decimal. The first two problems are completed as examples.

1.) 0.5206 is between **0** and **1** Approximate size of decimal: **0.52**

2.) 7.0791 is between **7** and **8** Approximate size of decimal: **7.08** rounded
(Think – Difficult)

3.) 2.093 is between **2** and **3** Approximate size of decimal: **2.09**

4.) 4.872 is between **4** and **5** Approximate size of decimal: **4.87**

5.) 20.7501 is between **20** and **21** Approximate size of decimal: **20.75**

6.) 0.192009 is between **0** and **1** Approximate size of decimal: **0.19**

7.) 14.64444 is between **14** and **15** Approximate size of decimal: **14.64**

8.) 11.2 is between **11** and **12** Approximate size of decimal: **11.20**

9.) 0.33333 is between **0** and **1** Approximate size of decimal: **0.33**

10.) 2.1680 is between **2** and **3** Approximate size of decimal: **2.17** **rounded**
(Think – Difficult)

11.) 8.0453 is between **8** and **9** Approximate size of decimal: **8.05** **rounded**
(Think – Difficult)

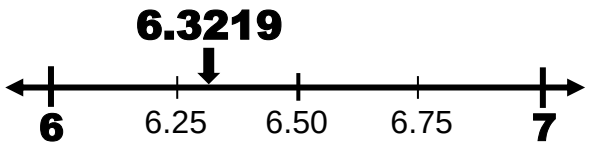
12.) 0.3508 is between **0** and **1** Approximate size of decimal: **0.35**

13.) 31.4101 is between **31** and **32** Approximate size of decimal: **31.41**

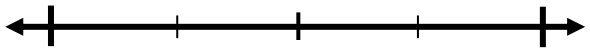
Plotting Decimals – Magnitude Numeracy Level 1 – V1

Directions: Write the approximate size of the decimal "Think Money." Then, PLOT the decimal after filling the quarter point decimal values and whole numbers on the Number Line to the right.

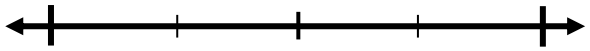
1.) 6.3219 Approximate size: **6.32**



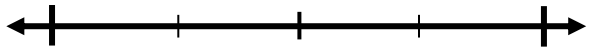
2.) 2.6935 Approximate size: _____



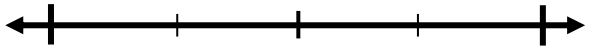
3.) 8.7 Approximate size: _____



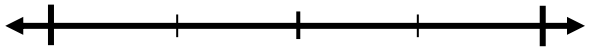
4.) 0.0449 Approximate size: _____



5.) 9.431 Approximate size: _____



6.) 0.9826 Approximate size: _____

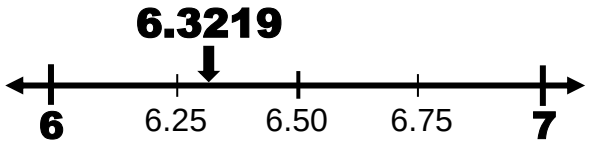


Plotting Decimals – Magnitude Numeracy Level 1 – V1

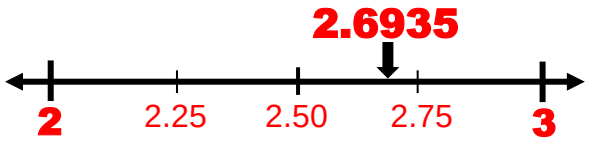
Solutions

Directions: Write the approximate size of the decimal "Think Money." Then, PLOT the decimal after filling the quarter point decimal values and whole numbers on the Number Line to the right.

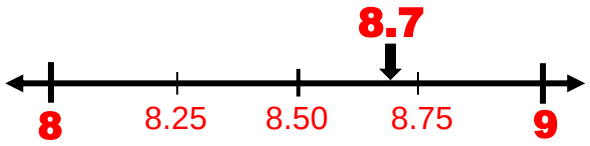
1.) 6.3219 Approximate size: **6.32**



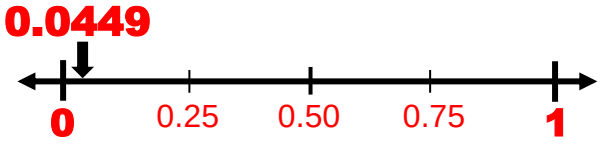
2.) 2.6935 Approximate size: **2.69**



3.) 8.7 Approximate size: **8.70**

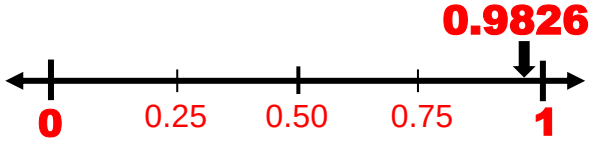


4.) 0.0449 Approximate size: **0.04**



5.) 9.431 Approximate size: **9.43**

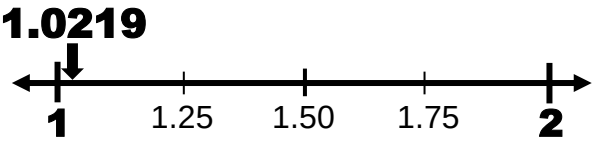
6.) 0.9826 Approximate size: **0.98**



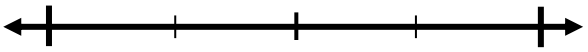
Plotting Decimals – Magnitude Numeracy Level 1 – V2

Directions: Write the approximate size of the decimal "Think Money." Then, PLOT the decimal after filling the quarter point decimal values and whole numbers on the Number Line to the right.

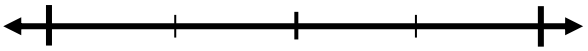
1.) 1.0219 Approximate size: **1.02**



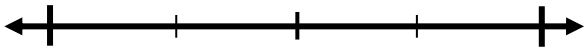
2.) 7.9003 Approximate size: _____



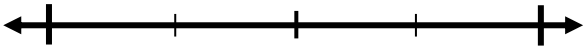
3.) 4.1 Approximate size: _____



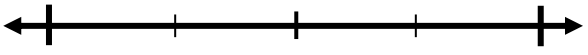
4.) 0.0122 Approximate size: _____



5.) 5.624 Approximate size: _____



6.) 0.9241 Approximate size: _____

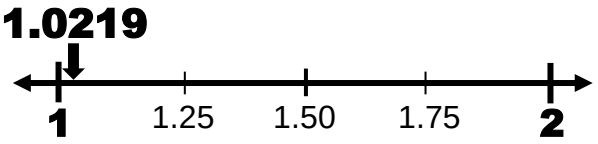


Plotting Decimals – Magnitude Numeracy Level 1 – V2

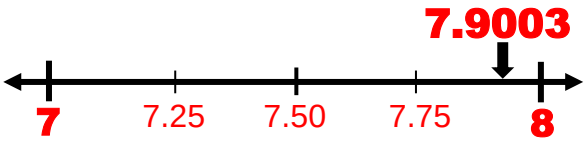
Solutions

Directions: Write the approximate size of the decimal "Think Money." Then, PLOT the decimal after filling the quarter point decimal values and whole numbers on the Number Line to the right.

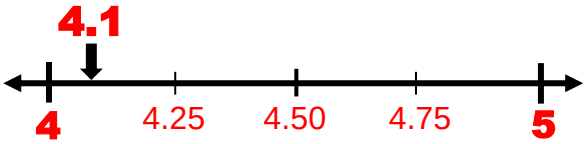
1.) 1.0219 Approximate size: **1.02**



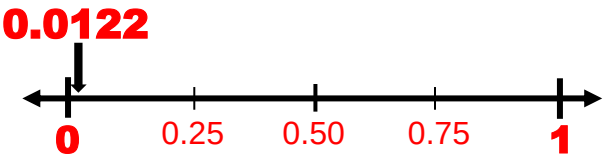
2.) 7.9003 Approximate size: **7.90**



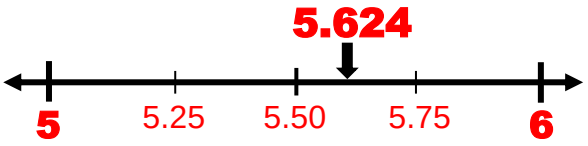
3.) 4.1 Approximate size: **4.10**



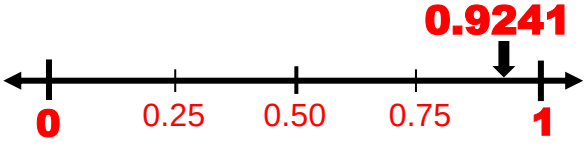
4.) 0.0122 Approximate size: **0.01**



5.) 5.624 Approximate size: **5.62**



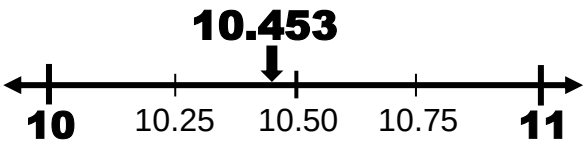
6.) 0.9241 Approximate size: **0.92**



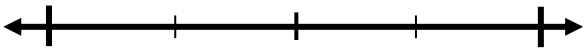
Plotting Decimals – Magnitude Numeracy Level 1 – V3

Directions: Write the approximate size of the decimal "Think Money." Then, PLOT the decimal after filling the quarter point decimal values and whole numbers on the Number Line to the right.

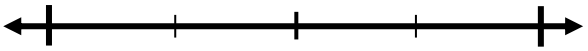
1.) 10.453 Approximate size: **10.45**



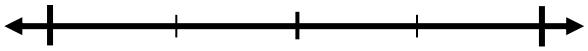
2.) 0.5613 Approximate size: _____



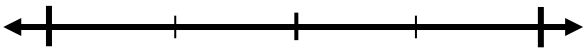
3.) 6.3 Approximate size: _____



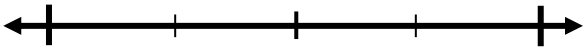
4.) 0.0703 Approximate size: _____



5.) 11.731 Approximate size: _____



6.) 0.8935 Approximate size: _____

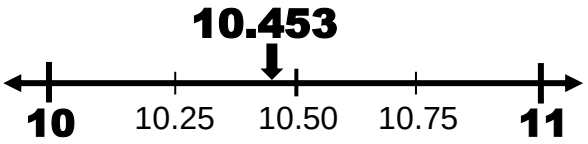


Plotting Decimals – Magnitude Numeracy Level 1 – V3

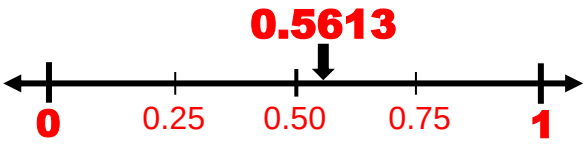
Solutions

Directions: Write the approximate size of the decimal "Think Money." Then, PLOT the decimal after filling the quarter point decimal values and whole numbers on the Number Line to the right.

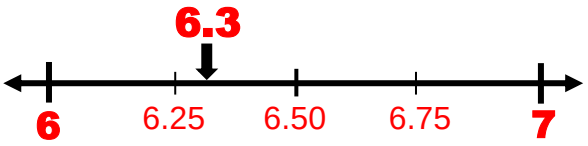
1.) 10.453 Approximate size: **10.45**



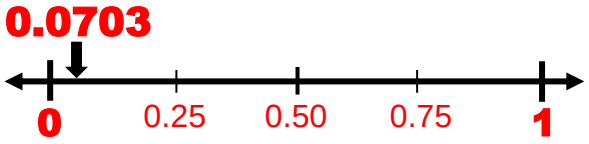
2.) 0.5613 Approximate size: **0.56**



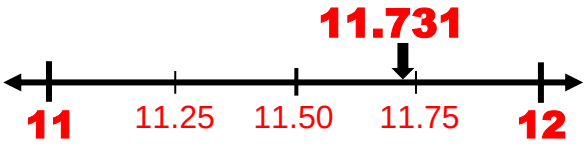
3.) 6.3 Approximate size: **6.30**



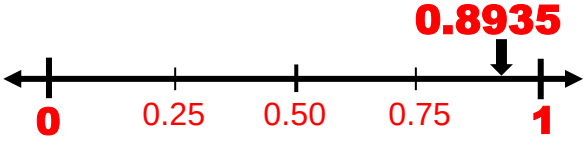
4.) 0.0703 Approximate size: **0.07**



5.) 11.731 Approximate size: **11.73**



6.) 0.8935 Approximate size: **0.89**



Decimals: Understanding Magnitudes – LEVEL 2 - V1

DIRECTIONS: Compute the decimal 'distance' to the nearest half and whole number of each decimal that is given on the left. Problem Number 1 is completed as an example.

		Whole Number	Half	Whole Number
1.)	2.7 ⇨	0.7 away from 2.0	0.2 away from 2.5	0.3 away from 3.0
2.)	4.2 ⇨	____ away from ____	____ away from ____	____ away from ____
3.)	3.10 ⇨	____ away from ____	____ away from ____	____ away from ____
4.)	10.9 ⇨	____ away from ____	____ away from ____	____ away from ____
5.)	7.80 ⇨	____ away from ____	____ away from ____	____ away from ____
6.)	6.50 ⇨	____ away from ____	____ away from ____	____ away from ____
7.)	7.2 ⇨	____ away from ____	____ away from ____	____ away from ____
8.)	22.1 ⇨	____ away from ____	____ away from ____	____ away from ____
9.)	9.10 ⇨	____ away from ____	____ away from ____	____ away from ____
10.)	4.7 ⇨	____ away from ____	____ away from ____	____ away from ____
11.)	13.4 ⇨	____ away from ____	____ away from ____	____ away from ____
12.)	4.60 ⇨	____ away from ____	____ away from ____	____ away from ____
13.)	2.9 ⇨	____ away from ____	____ away from ____	____ away from ____
14.)	12.3 ⇨	____ away from ____	____ away from ____	____ away from ____
15.)	23.70 ⇨	____ away from ____	____ away from ____	____ away from ____

Decimals: Understanding Magnitudes – LEVEL 2 - V1

DIRECTIONS: Compute the decimal 'distance' to the nearest half and whole number of each decimal that is given on the left. Problem Number 1 is completed as an example.

		Whole Number	Half	Whole Number
1.)	2.7 ⇨	0.7 away from 2.0	0.2 away from 2.5	0.3 away from 3.0
2.)	4.2 ⇨	0.2 away from 4.0	0.3 away from 4.5	0.8 away from 5.0
3.)	3.10 ⇨	0.1 away from 3.0	0.4 away from 3.5	0.9 away from 4.0
4.)	10.9 ⇨	0.9 away from 10.0	0.4 away from 10.5	0.1 away from 11.0
5.)	7.80 ⇨	0.8 away from 7.0	0.3 away from 7.5	0.2 away from 8.0
6.)	6.50 ⇨	0.5 away from 6.0	0.0 away from 6.5	0.5 away from 7.0
7.)	7.2 ⇨	0.2 away from 7.0	0.3 away from 7.5	0.8 away from 8.0
8.)	22.1 ⇨	0.1 away from 22.0	0.4 away from 22.5	0.9 away from 23.0
9.)	9.10 ⇨	0.1 away from 9.0	0.4 away from 9.5	0.9 away from 10.0
10.)	4.7 ⇨	0.7 away from 4.0	0.2 away from 4.5	0.3 away from 5.0
11.)	13.4 ⇨	0.4 away from 13.0	0.1 away from 13.5	0.6 away from 14.0
12.)	4.60 ⇨	0.6 away from 4.0	0.1 away from 4.5	0.4 away from 5.0
13.)	2.9 ⇨	0.9 away from 2.0	0.4 away from 2.5	0.1 away from 3.0
14.)	12.3 ⇨	0.3 away from 12.0	0.2 away from 12.5	0.7 away from 13.0
15.)	23.70 ⇨	0.7 away from 23.0	0.2 away from 23.5	0.3 away from 24.0

Decimals: Understanding Magnitudes – LEVEL 2 - V2

DIRECTIONS: Compute the decimal 'distance' to the nearest half and whole number of each decimal that is given on the left. Problem Number 1 is completed as an example.

		Whole Number	Half	Whole Number
1.)	4.3 ⇨	0.3 away from 4.0	0.2 away from 4.5	0.7 away from 5.0
2.)	6.2 ⇨	____ away from ____	____ away from ____	____ away from ____
3.)	2.10 ⇨	____ away from ____	____ away from ____	____ away from ____
4.)	11.9 ⇨	____ away from ____	____ away from ____	____ away from ____
5.)	8.80 ⇨	____ away from ____	____ away from ____	____ away from ____
6.)	7.50 ⇨	____ away from ____	____ away from ____	____ away from ____
7.)	8.2 ⇨	____ away from ____	____ away from ____	____ away from ____
8.)	27.1 ⇨	____ away from ____	____ away from ____	____ away from ____
9.)	6.10 ⇨	____ away from ____	____ away from ____	____ away from ____
10.)	8.7 ⇨	____ away from ____	____ away from ____	____ away from ____
11.)	18.4 ⇨	____ away from ____	____ away from ____	____ away from ____
12.)	3.60 ⇨	____ away from ____	____ away from ____	____ away from ____
13.)	7.9 ⇨	____ away from ____	____ away from ____	____ away from ____
14.)	16.3 ⇨	____ away from ____	____ away from ____	____ away from ____
15.)	43.70 ⇨	____ away from ____	____ away from ____	____ away from ____

Decimals: Understanding Magnitudes – LEVEL 2 - V2

DIRECTIONS: Compute the decimal 'distance' to the nearest half and whole number of each decimal that is given on the left. Problem Number 1 is completed as an example.

		Whole Number	Half	Whole Number
1.)	4.3 ⇨	0.3 away from 4.0	0.2 away from 4.5	0.7 away from 5.0
2.)	6.2 ⇨	0.2 away from 6.0	0.3 away from 6.5	0.8 away from 7.0
3.)	2.10 ⇨	0.1 away from 2.0	0.4 away from 2.5	0.9 away from 3.0
4.)	11.9 ⇨	0.9 away from 11.0	0.4 away from 11.5	0.1 away from 12.0
5.)	8.80 ⇨	0.8 away from 8.0	0.3 away from 8.5	0.2 away from 9.0
6.)	7.50 ⇨	0.5 away from 7.0	0.0 away from 7.5	0.5 away from 8.0
7.)	8.2 ⇨	0.2 away from 8.0	0.3 away from 8.5	0.8 away from 9.0
8.)	27.1 ⇨	0.1 away from 27.0	0.4 away from 27.5	0.9 away from 28.0
9.)	6.10 ⇨	0.1 away from 6.0	0.4 away from 6.5	0.9 away from 7.0
10.)	8.7 ⇨	0.7 away from 8.0	0.2 away from 8.5	0.3 away from 9.0
11.)	18.4 ⇨	0.4 away from 18.0	0.1 away from 18.5	0.6 away from 19.0
12.)	3.60 ⇨	0.6 away from 3.0	0.1 away from 3.5	0.4 away from 4.0
13.)	7.9 ⇨	0.9 away from 7.0	0.4 away from 7.5	0.1 away from 8.0
14.)	16.3 ⇨	0.3 away from 16.0	0.2 away from 16.5	0.7 away from 17.0
15.)	43.70 ⇨	0.7 away from 43.0	0.2 away from 43.5	0.3 away from 44.0

Decimals: Understanding Magnitudes – LEVEL 2 - V3

DIRECTIONS: Compute the decimal 'distance' to the nearest half and whole number of each decimal that is given on the left. Problem Number 1 is completed as an example.

		Whole Number	Half	Whole Number
1.)	8.4 ⇨	0.4 away from 8.0	0.1 away from 8.5	0.6 away from 9.0
2.)	6.3 ⇨	____ away from ____	____ away from ____	____ away from ____
3.)	4.10 ⇨	____ away from ____	____ away from ____	____ away from ____
4.)	16.9 ⇨	____ away from ____	____ away from ____	____ away from ____
5.)	4.80 ⇨	____ away from ____	____ away from ____	____ away from ____
6.)	8.50 ⇨	____ away from ____	____ away from ____	____ away from ____
7.)	1.2 ⇨	____ away from ____	____ away from ____	____ away from ____
8.)	58.1 ⇨	____ away from ____	____ away from ____	____ away from ____
9.)	0.10 ⇨	____ away from ____	____ away from ____	____ away from ____
10.)	0.7 ⇨	____ away from ____	____ away from ____	____ away from ____
11.)	73.4 ⇨	____ away from ____	____ away from ____	____ away from ____
12.)	0.60 ⇨	____ away from ____	____ away from ____	____ away from ____
13.)	7.9 ⇨	____ away from ____	____ away from ____	____ away from ____
14.)	14.3 ⇨	____ away from ____	____ away from ____	____ away from ____
15.)	45.70 ⇨	____ away from ____	____ away from ____	____ away from ____

Decimals: Understanding Magnitudes – LEVEL 2 - V3

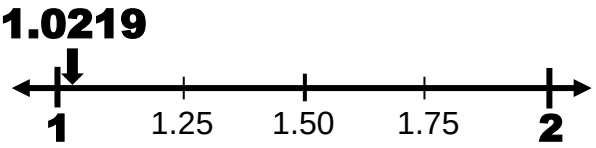
DIRECTIONS: Compute the decimal 'distance' to the nearest half and whole number of each decimal that is given on the left. Problem Number 1 is completed as an example.

		Whole Number			Half			Whole Number		
1.)	8.4	0.4	away from	8.0	0.1	away from	8.5	0.6	away from	9.0
2.)	6.3	0.3	away from	6.0	0.2	away from	6.5	0.7	away from	7.0
3.)	4.10	0.1	away from	4.0	0.4	away from	4.5	0.9	away from	5.0
4.)	16.9	0.9	away from	16.0	0.4	away from	16.5	0.1	away from	17.0
5.)	4.80	0.8	away from	4.0	0.3	away from	4.5	0.2	away from	5.0
6.)	8.50	0.5	away from	8.0	0.0	away from	8.5	0.5	away from	9.0
7.)	1.2	0.2	away from	1.0	0.3	away from	1.5	0.8	away from	1.0
8.)	58.1	0.1	away from	58.0	0.4	away from	58.5	0.9	away from	59.0
9.)	0.10	0.1	away from	0.0	0.4	away from	0.5	0.9	away from	1.0
10.)	0.7	0.7	away from	0.0	0.2	away from	0.5	0.3	away from	1.0
11.)	73.4	0.4	away from	73.0	0.1	away from	73.5	0.6	away from	74.0
12.)	0.60	0.6	away from	0.0	0.1	away from	0.5	0.4	away from	1.0
13.)	7.9	0.9	away from	7.0	0.4	away from	7.5	0.1	away from	8.0
14.)	14.3	0.3	away from	14.0	0.2	away from	14.5	0.7	away from	15.0
15.)	45.70	0.7	away from	45.0	0.2	away from	45.5	0.3	away from	46.0

Plotting Decimals – Magnitude Numeracy Level 3 – V1

Directions: Write the approximate size of the decimal "Think Money." Then, PLOT the decimal after filling the quarter point decimal values and whole numbers on the Number Line to the right. Finally, write the **approximate** decimal distances from the points specified.

1.) **1.0219** Approximate size: **1.02**

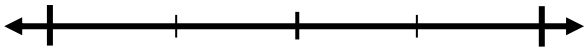


a.) Distance from 1: **0.02**

b.) Distance from 2: **0.98**

c.) Distance from 1 ½: **0.48**

2.) **7.9003** Approximate size: _____

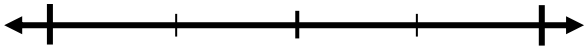


a.) Distance from 7: _____

b.) Distance from 8: _____

c.) Distance from 7 ½: _____

3.) **4.1** Approximate size: _____

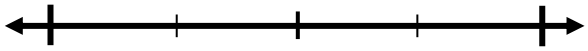


a.) Distance from 4: _____

b.) Distance from 5: _____

c.) Distance from 4 ½: _____

4.) **0.0122** Approximate size: _____

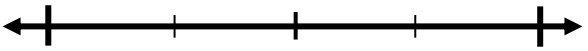


a.) Distance from 0: _____

b.) Distance from 1: _____

c.) Distance from ½: _____

5.) **5.624** Approximate size: _____

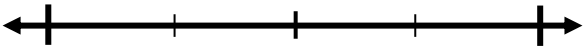


a.) Distance from 5: _____

b.) Distance from 6: _____

c.) Distance from 5 ½: _____

6.) **0.9241** Approximate size: _____



a.) Distance from 0: _____

b.) Distance from 1: _____

c.) Distance from ½: _____

Plotting Decimals – Magnitude Numeracy Level 3 – V1

Solutions

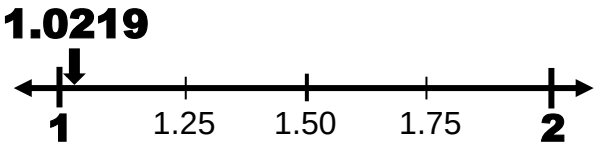
Directions: Write the approximate size of the decimal "Think Money." Then, PLOT the decimal after filling the quarter point decimal values and whole numbers on the Number Line to the right. Finally, write the **approximate** decimal distances from the points specified.

1.) **1.0219** Approximate size: **1.02**

a.) Distance from 1: **0.02**

b.) Distance from 2: **0.98**

c.) Distance from 1 ½: **0.48**



2.) **7.9003** Approximate size: **7.90**

a.) Distance from 7: **0.90**

b.) Distance from 8: **0.10**

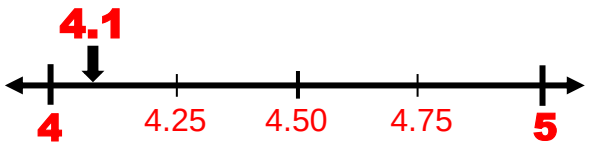
c.) Distance from 7 ½: **0.40**

3.) **4.1** Approximate size: **4.10**

a.) Distance from 4: **0.10**

b.) Distance from 5: **0.90**

c.) Distance from 4 ½: **0.40**

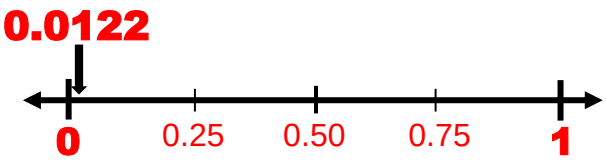


4.) **0.0122** Approximate size: **0.01**

a.) Distance from 0: **0.01**

b.) Distance from 1: **0.99**

c.) Distance from ½: **0.49**

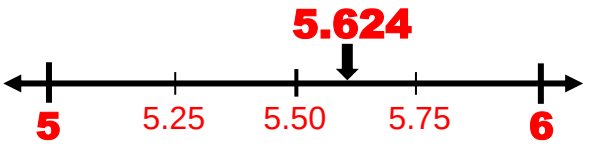


5.) **5.624** Approximate size: **5.62**

a.) Distance from 5: **0.62**

b.) Distance from 6: **0.38**

c.) Distance from 5 ½: **0.12**

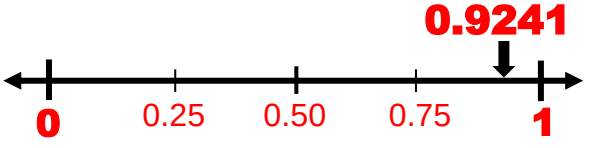


6.) **0.9241** Approximate size: **0.92**

a.) Distance from 0: **0.92**

b.) Distance from 1: **0.08**

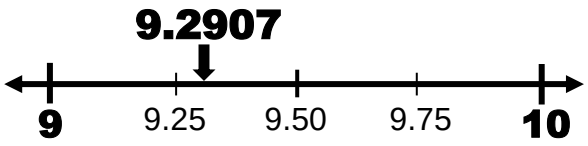
c.) Distance from ½: **0.42**



Plotting Decimals – Magnitude Numeracy Level 3 – V2

Directions: Write the approximate size of the decimal "Think Money." Then, PLOT the decimal after filling the quarter point decimal values and whole numbers on the Number Line to the right. Finally, write the **approximate** decimal distances from the points specified.

1.) **9.2907** Approximate size: **9.29**

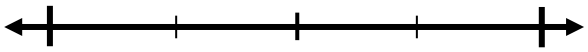


a.) Distance from 9: **0.29**

b.) Distance from 10: **0.71**

c.) Distance from 9 ½: **0.21**

2.) **16.3729** Approximate size: _____

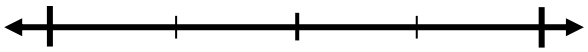


a.) Distance from 16: _____

b.) Distance from 17: _____

c.) Distance from 16 ½: _____

3.) **9.7** Approximate size: _____

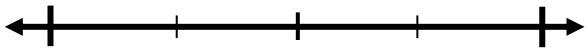


a.) Distance from 9: _____

b.) Distance from 10: _____

c.) Distance from 9 ½: _____

4.) **0.0514** Approximate size: _____

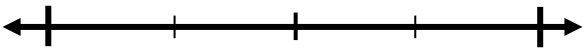


a.) Distance from 0: _____

b.) Distance from 1: _____

c.) Distance from ½: _____

5.) **1.7936** Approximate size: _____

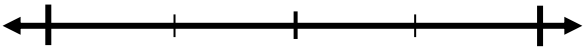


a.) Distance from 1: _____

b.) Distance from 2: _____

c.) Distance from 1 ½: _____

6.) **0.4829** Approximate size: _____



a.) Distance from 0: _____

b.) Distance from 1: _____

c.) Distance from ½: _____

Plotting Decimals – Magnitude Numeracy Level 3 – V2

Solutions

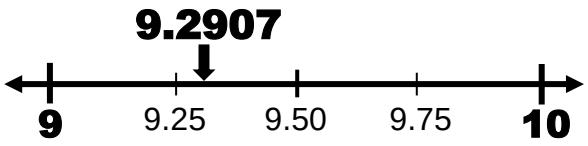
Directions: Write the approximate size of the decimal "Think Money." Then, PLOT the decimal after filling the quarter point decimal values and whole numbers on the Number Line to the right. Finally, write the **approximate** decimal distances from the points specified.

1.) **9.2907** Approximate size: **9.29**

a.) Distance from 9: **0.29**

b.) Distance from 10: **0.71**

c.) Distance from 9 ½: **0.21**

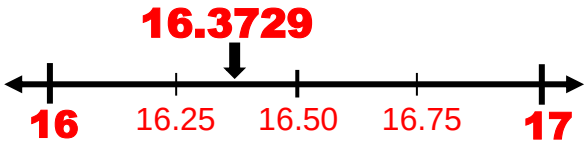


2.) **16.3729** Approximate size: **16.37**

a.) Distance from 16: **0.37**

b.) Distance from 17: **0.63**

c.) Distance from 16 ½: **0.13**

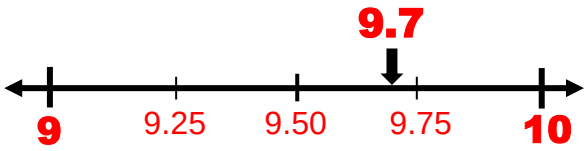


3.) **9.7** Approximate size: **9.70**

a.) Distance from 9: **0.70**

b.) Distance from 10: **0.30**

c.) Distance from 9 ½: **0.20**

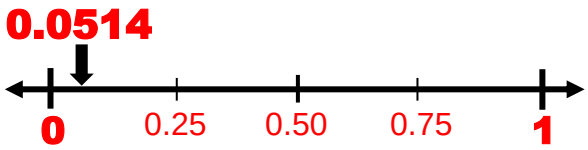


4.) **0.0514** Approximate size: **0.05**

a.) Distance from 0: **0.05**

b.) Distance from 1: **0.95**

c.) Distance from ½: **0.45**

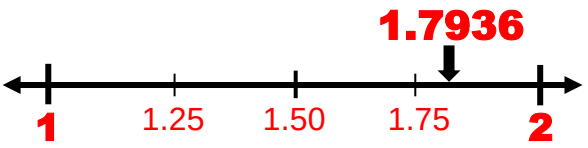


5.) **1.7936** Approximate size: **1.79**

a.) Distance from 1: **0.79**

b.) Distance from 2: **0.21**

c.) Distance from 1 ½: **0.29**



6.) **0.4829** Approximate size: **0.48**

a.) Distance from 0: **0.48**

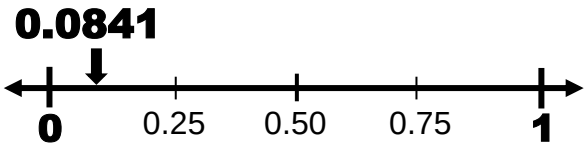
b.) Distance from 1: **0.52**

c.) Distance from ½: **0.02**

Plotting Decimals – Magnitude Numeracy Level 3 – V3

Directions: Write the approximate size of the decimal "Think Money." Then, PLOT the decimal after filling the quarter point decimal values and whole numbers on the Number Line to the right. Finally, write the **approximate** decimal distances from the points specified.

1.) **0.0841** Approximate size: **0.08**

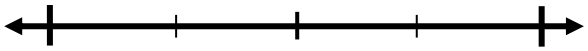


a.) Distance from 0: **0.08**

b.) Distance from 1: **0.92**

c.) Distance from ½: **0.42**

2.) **8.852** Approximate size: _____

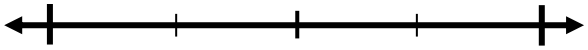


a.) Distance from 8: _____

b.) Distance from 9: _____

c.) Distance from 8 ½: _____

3.) **12.8** Approximate size: _____

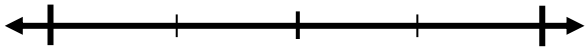


a.) Distance from 12: _____

b.) Distance from 13: _____

c.) Distance from 12 ½: _____

4.) **0.0933** Approximate size: _____

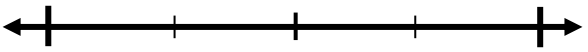


a.) Distance from 0: _____

b.) Distance from 1: _____

c.) Distance from ½: _____

5.) **4.0844** Approximate size: _____

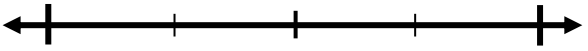


a.) Distance from 4: _____

b.) Distance from 5: _____

c.) Distance from 4 ½: _____

6.) **0.6138** Approximate size: _____



a.) Distance from 0: _____

b.) Distance from 1: _____

c.) Distance from ½: _____

Plotting Decimals – Magnitude Numeracy Level 3 – V3

Solutions

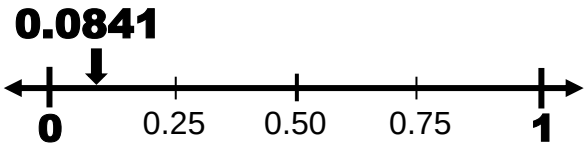
Directions: Write the approximate size of the decimal "Think Money." Then, PLOT the decimal after filling the quarter point decimal values and whole numbers on the Number Line to the right. Finally, write the **approximate** decimal distances from the points specified.

1.) **0.0841** Approximate size: **0.08**

a.) Distance from 0: **0.08**

b.) Distance from 1: **0.92**

c.) Distance from ½: **0.42**

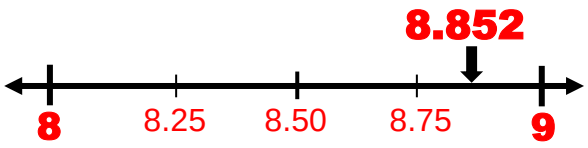


2.) **8.852** Approximate size: **8.85**

a.) Distance from 8: **0.85**

b.) Distance from 9: **0.15**

c.) Distance from 8 ½: **0.35**

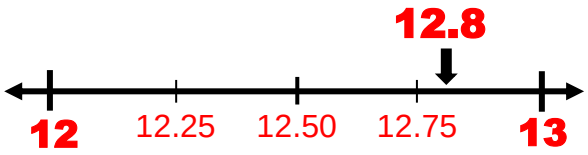


3.) **12.8** Approximate size: **12.80**

a.) Distance from 12: **0.80**

b.) Distance from 13: **0.20**

c.) Distance from 12 ½: **0.30**

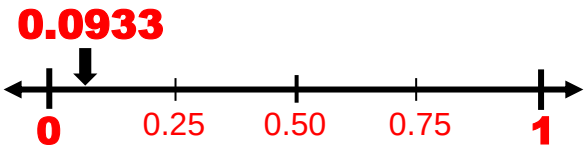


4.) **0.0933** Approximate size: **0.09**

a.) Distance from 0: **0.09**

b.) Distance from 1: **0.91**

c.) Distance from ½: **0.41**

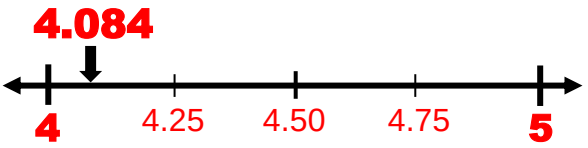


5.) **4.0844** Approximate size: **4.08**

a.) Distance from 4: **0.08**

b.) Distance from 5: **0.92**

c.) Distance from 4 ½: **0.42**



6.) **0.6138** Approximate size: **0.61**

a.) Distance from 0: **0.61**

b.) Distance from 1: **0.39**

c.) Distance from ½: **0.11**