

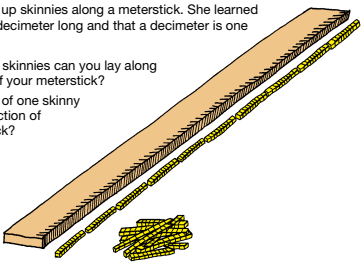
Tenths

Measuring to the Nearest Tenth of a Meter

Discuss

In the last lesson, Lee Yah used skinnies to measure to the nearest decimeter. She lined up skinnies along a meterstick. She learned that a skinny is one decimeter long and that a decimeter is one-tenth of a meter.

- How many skinnies can you lay along the edge of your meterstick?
 - The length of one skinny is what fraction of a meterstick?



The fraction for one-tenth can be written as a common fraction ($\frac{1}{10}$). The **denominator** (the number on the bottom) tells us that the meterstick is divided into ten equal parts. The **numerator** (the number on the top) tells us that a skinny is one of these parts.

The fraction for one-tenth can also be written as a decimal fraction (0.1). The decimal point tells us that the numbers to the right of the decimal point are smaller than 1.

$\frac{1}{10}$ ← numerator
 ← denominator

0.1
 ↑
 decimal point

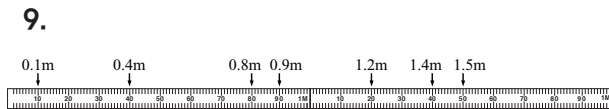
- Place 3 skinnies along the edge of a meterstick.
 - The length of 3 skinnies is what fraction of a meter?
 - Write this fraction as a common fraction and as a decimal fraction.

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Questions 1–32 (SG pp. 454–461)

- 10 skinnies
 - $\frac{1}{10}$ or 0.1 m
- three-tenths of a meter
 - $\frac{3}{10}$ and 0.3
- * five-tenths of a meter
 - * 0.5
 - * $\frac{5}{10}$ m = $\frac{1}{2}$ m
- 1.2 m
 - 0.1 m
 - 0.4 m
 - 1.4 m
 - 0.8 m
 - 1.5 m
 - 0.9 m
- length of the calculator, 0.1 m
- light switch height, 1.5 m
- 1.2 m is longer
 - 0.3 m longer; Possible explanation: I counted tenths of a meter like the hopper.
- 1.5 m is longer because I have 1 whole meter stick and 5 skinnies. 0.8 is only 8 skinnies.




10.* Answers will vary.


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- Place 5 skinnies along the edge of a meterstick.
 - The length of 5 skinnies is what fraction of a meter?
 - Write this fraction as a decimal fraction.
 - Write this fraction as a common fraction in two different ways.
- Lee Yah measured several distances to the nearest tenth of a meter using skinnies and a meterstick. Write the lengths to the nearest tenth of a meter as a decimal fraction.

Distance	Measurement of Distance	Length to the Nearest Tenth of a Meter
A. Length of table	1 meterstick and 2 skinnies	1.2 m
B. Length of calculator	1 skinny	
C. Length of floor tile	4 skinnies	
D. Length of string	1 meterstick and 4 skinnies	
E. Table height	8 skinnies	
F. Light switch height	1 meterstick and 5 skinnies	
G. Cabinet height	9 skinnies	

- Look at the measurements in Lee Yah's table. Which length is the shortest?
- Which length is the longest?
- Nicholas found 0.9 m and 1.2 m on the metersticks below.

0.9m


1.2m


 - Which is longer, 0.9 m or 1.2 m?
 - How much longer? How do you know?
- Which is longer 1.5 m or 0.8 m? How do you know?
- With your partner, locate the distances Lee Yah measured in Question 4 on a pair of metersticks. List the lengths in order from shortest to longest.
 - Describe five distances that are shorter than 2 meters.
 - Measure each length to the nearest tenth of a meter.
 - Put your measurements in order from shortest to longest.

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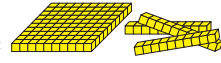
*Answers and/or discussion are included in the lesson.

- 11. A. 10 skinnies
B. $\frac{1}{10}$
- 12. A. one-tenth, two-tenths, three-tenths, four-tenths, five-tenths, six-tenths
B. six-tenths
C. $\frac{6}{10}$ and 0.6
- 13. A. one-tenth, two-tenths, three-tenths, four-tenths
B. four-tenths
C. $\frac{4}{10}$ and 0.4
- 14. A. one-tenth, two-tenths . . . ten-tenths
B. 10 tenths
C.* The ten in the denominator of $\frac{10}{10}$ means that the whole is divided into 10 equal parts and the 10 in the numerator means we are interested in all ten parts. 1 means one whole and 1.0 represents 1 whole and no tenths. All three represent the same number.
- 15. A. 2 flats
B. 2
- 16. A. one-tenth, two-tenths . . . ten-tenths
B.* ten-tenths or one whole
C. eleven-tenths or one and one-tenth
D. 20 skinnies
E. 20 tenths
- 17. 1.4, $1\frac{4}{10}$, $\frac{14}{10}$
- 18. A. 19 skinnies
B. 1 flat and 9 skinnies

A Flat as One Whole

To think about decimal fractions, we used the length of one meterstick as a unit whole. To think about decimal fractions another way, we are going to use one flat as the unit whole.

- 11. Use skinnies to cover a flat.
 - A. How many skinnies did you use?
 - B. If a flat is the unit whole, then what fraction is a skinny?
- 12. A. Place 6 skinnies on your flat. Skip count by tenths as you place each skinny. Start like this: one-tenth, two-tenths, three-tenths, etc. Write down the words that you say as you count.
 - B. What fraction of the flat is 6 skinnies?
 - C. Write this fraction as a common fraction and a decimal fraction.
- 13. A. Nicholas placed 4 skinnies on his flat. Put 4 skinnies on your flat. Skip count by tenths as you place each skinny. Write down the words that you say as you count.
 - B. What fraction of the flat is 4 skinnies?
 - C. Write this fraction as a common fraction and as a decimal fraction.
- 14. A. Linda placed 10 skinnies on her flat. Put 10 skinnies on your flat. Skip count by tenths as you place each skinny. Write down the words that you say as you count.
 - B. How many tenths is 10 skinnies?
 - C. Linda noticed that 10 skinnies covered one whole. She recorded this 3 ways: $\frac{10}{10}$, 1, and 1.0. Explain how each of these represents the same number.



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Exploring Tenths with the Tenths Helper

Use skinnies and the *Tenths Helper* page from the *Student Activity Book* to answer Questions 15–18.

- 15. A. Cover your Tenths Helper with flats. How many flats did you use?
B. What number does this represent?
- 16. A. Place 10 skinnies on your Tenths Helper. Count by tenths as you place each skinny on the chart.
B. When you are skip counting by tenths, what number comes after 9 tenths? (Hint: There is more than one answer to this question.)
C. Continue placing skinnies on your Tenths Helper. What number will you say as you place the eleventh skinny? (Hint: There is more than one answer to this question.)
D. How many skinnies does it take to fill the Tenths Helper?
E. How many tenths are in two wholes?
- 17. Michael placed 14 skinnies on his Tenths Helper. Write the number this represents in more than one way.
- 18. A. Grace wanted to build the number 1.9 on her Tenths Helper using skinnies. How many skinnies will she need to build this number?
B. Grace decided to use both flats and skinnies to build this number. How many flats will she need? How many skinnies?

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*Answers and/or discussion are included in the lesson.

Explore

Keenya uses a Tenths Helper to show tenths. First she places 12 skinnies on the chart. She counts by tenths as she places each skinny. Then, she records the value of 12 skinnies on the chart.

First, place 12 skinnies on your chart.

Then record the value on the chart in more than one way.

Use skinnies and the *Tenths Helper* page from the *Student Activity Book* to complete Questions 19–24. Use the skinnies to show each number, then record its value on the chart in more than one way.

19. A. 17 skinnies B. 4 skinnies
 C. 15 skinnies D. 9 skinnies
 E. 1 skinny F. 16 skinnies
 G. 18 skinnies

20. What number is represented on each row of your Tenths Helper? Fill in the missing values on your Tenths Helper.

21. A. Show 0.8 on your Tenths Helper. Take away one-tenth. What number is one-tenth smaller than eight-tenths?
 B. Show 0.8 on your Tenths Helper again. What number is 0.1 more than 0.8?

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19. A. $\frac{17}{10}$, $1\frac{7}{10}$, or 1.7
 B. $\frac{4}{10}$ or 0.4 (Just writing .4 is acceptable.)
 C. $\frac{15}{10}$, $1\frac{5}{10}$, or 1.5
 D. $\frac{9}{10}$ or 0.9
 E. $\frac{1}{10}$ or 0.1
 F. $\frac{16}{10}$, $1\frac{6}{10}$, or 1.6
 G. $\frac{18}{10}$, $1\frac{8}{10}$, 1.8

20.

0.1	$\frac{1}{10}$
0.2	$\frac{2}{10}$
0.3	$\frac{3}{10}$
0.4	$\frac{4}{10}$
0.5	$\frac{5}{10}$
0.6	$\frac{6}{10}$
0.7	$\frac{7}{10}$
0.8	$\frac{8}{10}$
0.9	$\frac{9}{10}$
1.0	$\frac{10}{10}$
1.1	$1\frac{1}{10}$ $\frac{11}{10}$
1.2	$1\frac{2}{10}$ $\frac{12}{10}$
1.3	$1\frac{3}{10}$ $\frac{13}{10}$
1.4	$1\frac{4}{10}$ $\frac{14}{10}$
1.5	$1\frac{5}{10}$ $\frac{15}{10}$
1.6	$1\frac{6}{10}$ $\frac{16}{10}$
1.7	$1\frac{7}{10}$ $\frac{17}{10}$
1.8	$1\frac{8}{10}$ $\frac{18}{10}$
1.9	$1\frac{9}{10}$ $\frac{19}{10}$
2.0	$1\frac{10}{10}$ $\frac{20}{10}$

21. A. 0.7 or 7 tenths or $\frac{7}{10}$
 B. 0.9 or 9 tenths or $\frac{9}{10}$
22. A. 13 tenths or 1.3
 B. 14 tenths or 1.4
 12 tenths or 1.2
23. 2.0 or 20 tenths or 2 wholes
24. 2.1 or 21 tenths or $\frac{21}{10}$
25. 4.6
- 26.* 10

22. Frank put 13 skinnies on his Tenths Helper.

A. How many tenths are shown?
 B. What number is one-tenth larger? One-tenth smaller?

23. What number is 0.1 larger than 1.9?

24. What number is 0.1 larger than 2.0?

Tenths and Place Value

Discuss

25. Romesh used base-ten pieces to make the following number. If a flat is one whole, what number did Romesh make?

26. If a flat is one whole, then what is the value of a pack? (Hint: How many flats does it take to make 1 pack?)

1 whole ?

If a flat is 1 whole, the pieces below show a number a little more than 23.

If a flat is 1 whole, then these pieces are twenty-three and four-tenths. This can be written as either 23.4 or $23\frac{4}{10}$. We can record this using base-ten shorthand.

$23\frac{4}{10}$ or 23.4

We can record 23.4 on a place value chart.






Number	Place Value			Number Sentences	
	Tens	Ones	Tenths	Decimal Fractions	Common Fractions
23.4	2	3	.4	$20 + 3 + 0.4 = 23.4$	$20 + 3 + \frac{4}{10} = 23.4$

The 4 to the right of the decimal point is in the **tenths place**. So 23.4 is made up of 2 tens (20), 3 ones (3), and 4 tenths ($\frac{4}{10}$).

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*Answers and/or discussion are included in the lesson.

27. A. 
- B. 
- C. 
- D. 
- E. 

28. A. $2\frac{5}{10}$ and 2.5; $2 + .5 = 2.5$
 B. $12\frac{4}{10}$ and 12.4; $10 + 2 + .4 = 12.4$
 C. $\frac{9}{10}$ and 0.9; $0 + .9 = .9$
 D. 10.3 and $10\frac{3}{10}$; $10 + .3 = 10.3$
29. Answers will vary.
30. Answers will vary. One example is given for 2.3:

A. 2 metersticks and 3 skinnies



C. $2\frac{3}{10}$

D. 2.3

31. Answers will vary

32. Answers will vary.



27. Use base-ten pieces to make these numbers. Then use base-ten shorthand to show what pieces you used. (Remember: the flat is one whole.)
 A. 1.7 B. 3.4 C. 0.6 D. 13.2 E. 10.1

28. Write decimals, common fractions, and number sentences for the base-ten shorthand below:



29. Work with a partner to practice making numbers with base-ten pieces and writing them using decimals and common fractions. One person should lay out packs, flats, and skinnies. The other person should show base-ten shorthand and write numbers for the pieces. Keep track of your work in a table like this:

Tenths Data Table

Base-Ten Shorthand	Common Fraction	Decimal Fraction

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✓ Check-In: Questions 30-32

30. Choose a number between 2 and 3.
 A. Show your number with metersticks and skinnies. How many of each?



- B. Show your number with base-ten shorthand.
 C. Write your number as a common fraction.
 D. Write your number as a decimal fraction.

31. Choose a number between 2.5 and 3.

A. Show the number with metersticks and skinnies. How many of each?



- B. Show the number with base-ten shorthand.
 C. Write your number as a common fraction.
 D. Write your number as a decimal fraction.

32. Compare the numbers you chose for Questions 30 and 31.

- A. Which is larger? Show or tell how you decided.
 B. What number is one-tenth larger than your largest number? Show or tell how you know.
 C. What number is one-tenth smaller than your largest number? Show or tell how you know.

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Use the *Grace's Base-Ten Pieces* page in the *Student Activity Book* to show, write, and order decimals.

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Exploring Tenths (SAB pp. 405–406)

Questions 1–8

1. seven-tenths, $\frac{7}{10}$, or 0.7
2. A. four wholes
B. 4.6, or $4\frac{6}{10}$, or $\frac{46}{10}$
- 3.

	Distance Measured	Common Fraction	Decimal Fraction
A.	1 meterstick and 1 skinny	$1\frac{1}{10}$ m	1.1 m
B.	2 metersticks and 7 skinnies	$2\frac{7}{10}$ m	2.7 m
C.	2 metersticks and 2 skinnies	$2\frac{2}{10}$ m	2.2 m
D.	3 metersticks and 9 skinnies	$3\frac{9}{10}$ m	3.9 m
E.	3 metersticks and 1 skinny	$3\frac{1}{10}$ m	3.1 m

4. 1.1 m, 2.2 m, 2.7 m, 3.1 m, 3.9 m
- 5.

	Base-Ten Shorthand	Common Fraction	Decimal Fraction
A.	□ □ □	$12\frac{9}{10}$	12.9
B.	□ □ □ □ □ □ □	$33\frac{4}{10}$	33.4
C.	□ □ □ □ □ □	$6\frac{7}{10}$	6.7
D.	□ □ □ □ □ □ □ □	$34\frac{4}{10}$	34.4
E.	□ □	$20\frac{5}{10}$	20.5

- 6.

	Number	Place Value			Number Sentence
		Tens	Ones	Tenths	
A.	12.9	1	2	. 9	$10 + 2 + 0.9 = 12.9$
B.	33.4	3	3	. 4	$30 + 3 + 0.4 = 33.4$
C.	6.7	0	6	. 7	$6 + 0.7 = 6.7$
D.	34.4	3	4	. 4	$30 + 4 + 0.4 = 34.4$
E.	20.5	2	0	. 5	$20 + 0.5 = 20.5$

7. 6.7, 12.9, 20.5, 33.4, 34.4
- 8.

	Number	Place Value			Number Sentence
		Tens	Ones	Tenths	
A.	71.4	7	1	. 4	$70 + 1 + \frac{4}{10} = 71\frac{4}{10}$
B.	64.2	6	4	. 2	$60 + 4 + \frac{2}{10} = 64\frac{2}{10}$
C.	30.5	3	0	. 5	$30 + \frac{5}{10} = 30\frac{5}{10}$
D.	3.0		3	. 0	$3 + \frac{0}{10} = 3$

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Name _____ Date _____

Exploring Tenths

1. Nila built the following number on her Tenths Helper chart:



Write this number in more than one way. _____

2. A. Jackie placed 4 flats on her desk. How many whole units does this represent? _____
B. She added 6 skinnies to the 4 flats. What number does 4 flats and 6 skinnies represent? _____
3. Jerome measured several distances listed below using metersticks and base-ten pieces. Fill in the missing information.

	Distance Measured	Common Fraction	Decimal Fraction
A.	1 meterstick and 1 skinny		
B.			2.7 m
C.	2 metersticks and 2 skinnies		
D.		$3\frac{9}{10}$ m	
E.			3.1 m

4. Put Jerome's measurements in Question 3 in order from shortest to longest. Write the measurements as decimal fractions.

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Name _____ Date _____

5. Practice making numbers with base-ten pieces. Write them using decimals and common fractions. Fill in the missing information.

	Base-Ten Shorthand	Common Fraction	Decimal Fraction
A.	□ □ □		
B.	□ □ □ □ □ □ □		
C.			6.7
D.		$34\frac{4}{10}$	
E.			20.5

6. Complete the place value chart. Use decimal fractions in the number sentences.

	Number	Place Value			Number Sentence
		Tens	Ones	Tenths	
A.	12.9				$10 + 2 + 0.9 = 12.9$
B.	33.4				
C.			6	. 7	
D.	34.4				
E.		2	0	. 5	

7. Put the numbers in the first column of the chart in Question 6 in order from smallest to largest. Use decimal fractions.

8. Complete the place value chart. Use common fractions in the number sentences.

	Number	Place Value			Number Sentence
		Tens	Ones	Tenths	
A.	71.4			. 4	$70 + 1 + \frac{4}{10} = 71\frac{4}{10}$
B.		6	4	. 2	
C.	30.5			. 5	
D.	3.0			. 0	

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