

Teacher Guide

Stack Up Work

Questions 1–3 (TG pp. 1–2)

1. **A.** Predications will vary.
B.* Answers may vary slightly but a reasonable estimate is 34 or 35 pennies. The accuracy of a student’s prediction will vary depending on the original predication.
2. **A.*** It will take about 700 pennies to make a stack 1 meter tall.
B.* Possible response: I measured my pennies and found that I needed 7 pennies to make a stack 1 centimeter tall. That means I will need 7 pennies \times 5 centimeters = 35 pennies for a 5 centimeter tall stack. I doubled that and found that I need 70 pennies for a stack 10 centimeters tall. Since there are 100 centimeters in a meter and there are 10 tens in 100, I multiplied 70 pennies \times 10 = 700 pennies in a one meter stack.

I checked my answer using a table to see a pattern. Each time I added 70 pennies to the stack the height of the stack increased by 10 centimeters.

Number of Pennies in Stack	Number of Centimeters Tall
70	10
140	20
210	30
280	40
350	50
420	60
490	70
560	80
630	90
700	100

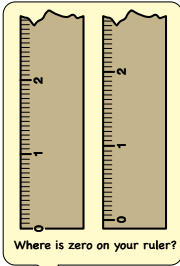
- 3.* Answers will vary. See the discussion of two student work samples with sample scored feedback boxes to use as a guide.

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Stack Up Work

Work with a small group to collect data using pennies. Each group will need 20 pennies. You may use any tools that you use in class, including graph paper, a ruler, and a calculator.

1. **A.** Predict how many pennies you will need to build a stack of pennies with a height of 5 cm.

- B.** Check your prediction. How many pennies did you need?

How accurate was your prediction?

2. **A.** How many pennies would you need to build a stack 1 meter tall? (100 cm = 1 m)
- B.** Explain how you found and checked your answer.

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✓ Check-In: Question 3

3. The moon moves around the Earth in an orbit. Its average distance from the Earth is 384,400 km. (1 km = 1000 m) How many pennies would you need to build a stack to reach the moon? Show all of your work. Write a paragraph to justify your solution.



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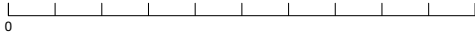
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* Answers and/or discussion are included in the lesson.

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Part 5 Numbers in the Hundreds and Thousands

1. Number the line below from 0 to 10,000. Skip count by 1000s.



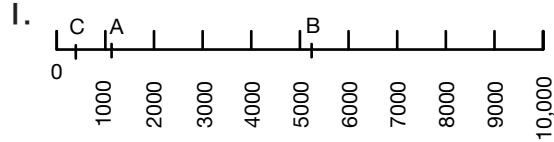
Read each of the facts about the United States. Then make a tick mark on the number line to show where each number falls on the line. Label the tick mark with the appropriate letter.

- A. The highest bridge in the United States—1053 feet—is in Colorado. It is the suspension bridge over the Royal Gorge of the Arkansas River.
 - B. Mount Katahdin is the highest spot in Maine—5267 feet. This mountain is the first place in the entire United States to get hit with sunlight when the sun rises in the morning.
 - C. The world's tallest tree is 378 feet tall. It is a redwood tree in California. It is almost as tall as a 40-story building.
2. Without actually finding exact answers to these problems, give the number of digits in the answer. Explain how you know.

- A. $512 + 369$
- B. $843 - 776$
- C. $2190 + 8756$
- D. 15×65
- E. $4589 - 637$

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Part 5. Numbers in the Hundreds and Thousands (TG p. 4)
Questions 1–2



- 2. A. 3 digits; $512 + 369$ is less than 1000; it is about 880.
- B. 2 digits; The difference is less than 100.
- C. 5 digits; Estimating, the sum will be over 10,000.
- D. $10 \times 65 = 650$, $20 \times 65 = 1300$. The answer is in the middle. Add 300 to 650 and get 950. Subtract 300 from 1300 and get 1000. The number in the middle of 950 and 1000 is 975—3 digits.
- E. 4 digits; The difference is about 4000.

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Part 6 Multiplication Practice

1. A. 200×60 B. $300 \times 4 =$ C. $3000 \times 50 =$ D. $3000 \times 800 =$
- E. $5000 \times 20 =$ F. $30 \times 600 =$ G. $900 \times 300 =$ H. $20,000 \times 5,000 =$

2. Solve the following problems. Choose an appropriate method: mental math, paper-and-pencil, or a calculator. Hint: Sometimes drawing a picture of a problem can help you solve it.
- A. Jessie's mother is shopping in a sports store. Socks are on sale for \$2.95 for 3 pairs. If she has \$20, how many pairs of socks can she buy?
 - B. Lin's father purchased a brand new car. His car payments are \$500 monthly for 4 years. After 4 years, how much will he have paid for his car?
 - C. Last year Mr. Moreno bought two cans of soda from the machine at school each day. This year he decided to drink water instead. If one can of soda costs \$1.50, will Mr. Moreno save more or less than \$600 in one school year? (A school year has about 180 school days.)

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Part 6. Multiplication Practice (TG p. 5)
Questions 1–2

- 1. A. 12,000
- B. 1200
- C. 150,000
- D. 2,400,000
- E. 100,000
- F. 18,000
- G. 270,000
- H. 100,000,000
- 2. A. 18 pairs
- B. $500 \times 4 \times 12 = \$24,000$
- C. Less than \$600. Estimates will vary. He would save \$3 a day.
 $\$3 \times 200 \text{ days} = \600 .
 The actual number will be less since
 $\$3 \times 180 < \3×200 .

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Part 7. Number Sentences with Fractions (TG p. 6)
Questions 1–3

1. A. >
 B. =
 C. <
 D. >
 E. >, >, <
2. A. 2
 B. 8
 C. 9
 D. 5
3. A. Less than one; $\frac{3}{4}$
 B. Greater than one; $\frac{4}{3}$ or $1\frac{1}{3}$
 C. Greater than one; $\frac{10}{8}$ or $1\frac{1}{4}$
 D. Greater than one; $\frac{10}{8}$ or $1\frac{1}{4}$
 E. Less than one; $\frac{5}{12}$
 F. Possible response: First I found that $\frac{3}{4} = \frac{6}{8}$, then I added $\frac{6}{8} + \frac{4}{8} = \frac{10}{8}$. I rewrote this as mixed number $\frac{10}{8} = 1\frac{2}{8}$. Then I wrote $\frac{2}{8}$ in simplest terms, $1\frac{2}{8} = 1\frac{1}{4}$.

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Part 7 Number Sentences with Fractions

1. Write <, >, or = to make each number sentence true.

A. $\frac{9}{2} \bigcirc \frac{9}{10}$	B. $\frac{5}{10} \bigcirc \frac{10}{10}$
C. $\frac{7}{12} \bigcirc \frac{7}{10}$	D. $\frac{5}{10} \bigcirc \frac{9}{8}$
E. $\frac{9}{2} \bigcirc \frac{9}{10}$ and $\frac{5}{10} \bigcirc \frac{1}{2}$ so $\frac{3}{10} \bigcirc \frac{5}{8}$	
2. Find the fraction to make each number sentence true.

A. $\frac{6}{24} - \frac{1}{4} = \frac{\square}{8}$	B. $\frac{1}{3} = \frac{6}{\square}$
C. $\frac{4}{12} = \frac{\square}{16}$	D. $\frac{6}{15} = \frac{12}{\square}$
3. Estimate to decide if each sum or difference is less than or greater than one. Then solve each problem.

Circle one

A. $\frac{1}{4} + \frac{1}{2} = \square$	Less than one	Greater than one
B. $\frac{5}{3} - \frac{1}{3} = \square$	Less than one	Greater than one
C. $\frac{3}{4} + \frac{4}{8} = \square$	Less than one	Greater than one
D. $\frac{14}{8} - \frac{3}{8} = \square$	Less than one	Greater than one
E. $\frac{3}{4} - \frac{2}{6} = \square$	Less than one	Greater than one

F. Show or tell how you decided if the estimated answer was less than or greater than one for Question C.

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