Visual Learning Animation

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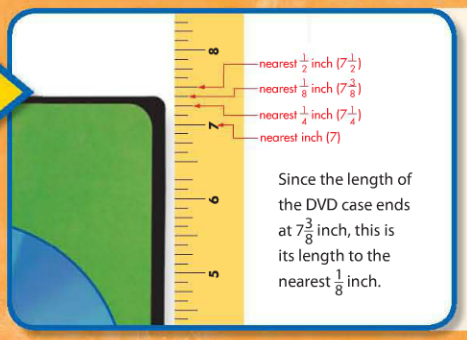
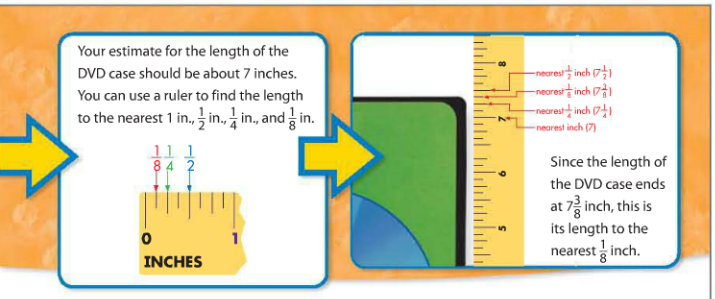
Should you always line up the end of the ruler with the beginning of the object? Explain. [No, you need to line up the object with the 0. On some rulers, the 0 is not at the end.] *What fraction of an inch would be represented if a ruler had a mark halfway between 0 and $\frac{1}{8}$?* [$\frac{1}{16}$]



Prevent Misconceptions

Some students may have difficulty finding a measurement to the nearest inch. Tell students that measuring to the nearest inch is like rounding a number to the nearest one. For example, 5.2 is closer to 5 than it is to 6. So, 5.2, rounded to the nearest one, is 5. In the same way, a measurement like $3\frac{5}{8}$ in., to the nearest inch, is more than halfway between 3 and 4. Therefore, $3\frac{5}{8}$ to the nearest inch would be 4 in.



Problem Solving

14. Which line segment measures about $2\frac{1}{2}$ inches long?

A

B

C

D

15. **Think About the Process** Mae spent $12 on a new purse, $6 on lunch, and $14 for a book. She had $12 when she got home. Which expression shows how much money Mae started with?

A $12 - 12 + 6 + 14$

B $(2 \times 12) + 14 + 6$

C $12 - 6 - (14 + 12)$

D $2 \times (12 + 12) - 14$

16. **Writing to Explain** When you measure the length of an object, will your measurement ever be exact? Explain.
See margin.

17. Jan has $49 to spend on poster board. If each poster board costs $3, how many poster boards can she buy?
16 poster boards

18. **Estimation** Sheri played 4 computer games in 48 minutes. She scored about 825 points per game. About how many points did she score per minute?
Sample answer: About 60 points per min.

19. **Number Sense** To find $8.3 \times 1{,}000$, how many places will you move the decimal point to the right? How many zeros will you need to annex? What is the product?
3 places; 2 zeros; 8,300

20. The measure of the length of a paper clip to the nearest inch, $\frac{1}{2}$ inch, and $\frac{1}{4}$ inch is 2 inches. How is this possible?
Sample answer: If the paper clip is $2\frac{1}{16}$ long, to the nearest inch, $\frac{1}{2}$ inch, and $\frac{1}{4}$ would be 2 inches.

21. **Writing to Explain** Fifteen pounds of meat cost $26.85. Is it reasonable to say that the price per pound is $11? Explain.
No; 11×15 pounds = $165. $165 is much greater than the given cost.

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Answers

16. No measure is exact. An inch, for example, could be divided into more equal parts, such as 16ths or 32ths, to get more precise measurements.

Problem Solving

Exercise	Content
14	Linear Measurement
15	Write Numeric Expressions
16	Linear Measurement Communicate Math Understanding
17	Division (49 ÷ 3)
18	Estimation Multiple Step [(800 × 4) ÷ 50]
19	Multiplication (8.3 × 1,000)
20	Communicate Math Understanding Linear Measurement
21	Estimate (30 ÷ 15) Communicate Math Understanding

Students use underlying processes and mathematical tools for Exercises 14–21. Remind students to check for reasonableness when solving each problem.

Exercise 15

Test-Taking Tip: Understand the Question Remind students to look for important words in a question. ***Remember that the question is asking you to find the expression that shows how much money Mae "started" with.***

Exercise 16

Language of Math: Everyday Vocabulary Students may not understand the difference between *exact* and *nearest*. ***Remember that when the word "exact" is used in measurement, it means the measured object is perfectly aligned with a mark on your ruler.***