Math Milestones™ — Grade 6

6:1 $\frac{2}{3}$ of a charging cord is $\frac{1}{2}$ meter long. How long is the charging cord? (Answer in meters.)

6:2 **(1)** Would you prefer 33% of a \$100 prize or 75% of a \$50 prize? **(2)** 8 is 25% of what number? **(3)** 14 is what percent of 200? **(4)** Write 6.25% as a decimal, then as a fraction in lowest terms. **(5)** Find the total cost of a \$16 item after a sales tax of 6.25% is added. **(6)** A 3% tax on a \$100 item adds ___ dollars to the cost. A 3% tax on a \$1 item adds ___ dollars to the cost.

6:3 The table shows temperatures at the South Pole before and after midnight on October 10–11, 2019.

Time	Hours after Midnight	Temp °F
8:00 pm	−4	−42
9:00 pm	−3	−42
10:00 pm	−2	−41
11:00 pm	−1	−40
Midnight	0	−39
1:00 am	1	−39
2:00 am	2	−38

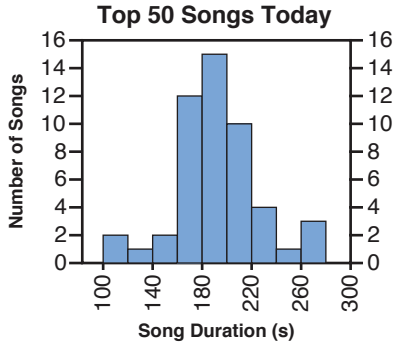
Plot the data on graph paper and label the plot. Describe any patterns you see.

6:4 My car drives 570 mi with 15 gal of gas. **(1)** *Mental math/Pencil and paper* **(a)** If I drive 57 mi, I'll use ___ gal. **(b)** If I drive 5,700 mi, I'll use ___ gal. **(c)** If I have 5 gal left, I can drive ___ more mi. **(d)** I can drive ___ mi with 30 gal. **(2)** *Calculator* Calculate both unit rates for the proportional relationship. **(3) (a)** If I drive 532 mi, I'll use ___ gal. **(b)** If I have 11 gal left, I can drive ___ more mi. **(4)** Make a two-column table using your answers to (1a), (1c), (1d), (3a), and (3b). Then use graph paper to plot the values in the table. Label the axes of your plot.

6:5 **(1)** Which of the numbers 5, −7, $\frac{2}{3}$, $-\frac{1}{2}$ is farthest from 0 on a number line? Which is closest to 0? **(2)** True or False: $\frac{1}{2} > -8$. **(3)** Explain why $-(-0.2) = 0.2$ makes sense.

6:6 A farmer uses a tractor to plant corn quickly in the springtime. The farmer plants 216 acres every 12 hours. Create a formula for the number of acres the farmer plants in n hours.

6:7 **(1)** Look up the 50 top songs on a music streaming service. Type each song's duration into a spreadsheet. **(2)** Write a sentence about the data giving a measure of center and a measure of variability. **(3)** Make a histogram of the data.* **(4)** Write a sentence describing the overall pattern of the distribution and any striking deviations from the overall pattern. **(5)** Imagine that one year from now, you go back online and repeat (1)–(4). In what ways would you expect the data distribution to look similar? What differences would you expect to see?



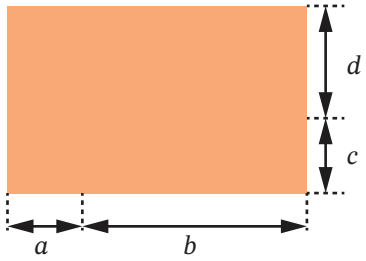
*Use this histogram for (4) and (5) if you don't do (3).

6:8 *Pencils down* If $r = 1.748$, what is the value of $0.96r + 0.04r - r$?

6:9 How much of a $\frac{3}{4}$-ton truckload is $\frac{2}{3}$ ton of gravel?

6:10 In the month of February 2021, there were 20 weekdays and 8 weekend days. Here are some questions about that month. **(1)** (Circle all of the correct answers.) The ratio of weekdays to weekend days was 20:8 10:4 5:2 5:7. **(2)** There were ___ times as many weekdays as weekend days. **(3)** True or false: $\frac{5}{7}$ of the days that month were weekdays. **(4)** Approximately what percent of the days that month were weekdays?

6:11 The diagram shows a rectangle. The variables a, b, c, and d are lengths in meters.



(1) Using the variables, write three different expressions for the area of the rectangle. **(2)** Choose two of your expressions and show that they are equivalent by applying properties of operations. **(3)** State the property or properties you used.

6:12 **(1)** What is the area of the triangle in the coordinate plane with vertices (1, 2), (−5, 2), and (−8, 9)? **(2)** How does the area change if we change the third vertex to (−3, 9)?

6:13 *Pencils down* Think about the equation $241p = \frac{3}{4}$. Is there a whole number that solves it? Is there a non-whole number that solves it? Convince a classmate that your answers are right.

6:14 *Pencil and paper* **(1)** $81.53 \div 3.1 = ?$ **(2)** $\frac{7}{8} \div \frac{2}{3} = ?$ **(3)** Check both of your answers by multiplying.

Math Milestones™ Task List — Grade 6

The 14 Math Milestones™ tasks for grade 6 have been carefully crafted to embody grade 6 mathematics on one page.

6:1	Charging Cord	C A	6.NS.A.1, 6.EE.B.7
6:2	Prizes, Prices, and Percents	C P	6.RP.A.3c
6:3	South Pole Temperatures	C A	6.NS.C.7, 8
6:4	Gas Mileage	C A	6.RP.A.2, 3
6:5	Positive and Negative Numbers	C	6.NS.C.6, 7
6:6	Planting Corn	C	6.RP.A, 6.EE.C.9
6:7	Song Length Distribution	C P A	6.SP
6:8	Evaluating an Expression	P	6.EE.A
6:9	Truckload of Gravel	C A	6.NS.A.1, 6.EE.B.7
6:10	Weekdays and Weekend Days	C	6.RP.A.1
6:11	Area Expressions	C	6.EE.A
6:12	Coordinate Triangle	C P	6.G.A.1, 3
6:13	Is There a Solution? (Multiplication)	C P	6.EE.B.5
6:14	Dividing Decimals and Fractions	P	6.NS.A.1, 6.NS.B

C = Task has a conceptual focus.
P = Task has a procedural skill & fluency focus.
A = Task has an application focus.

Standards for Mathematical Practice

MP.1	Make sense of problems and persevere in solving them.	6:4, 6:13
MP.2	Reason abstractly and quantitatively.	6:1, 6:2–4 6:6, 6:9–11
MP.3	Construct viable arguments and critique the reasoning of others.	6:5, 6:7, 6:11, 6:13
MP.4	Model with mathematics.	6:2, 6:4, 6:6, 6:7
MP.5	Use appropriate tools strategically.	6:1, 6:4, 6:7, 6:9
MP.6	Attend to precision.	6:4, 6:8, 6:10, 6:14
MP.7	Look for and make use of structure.	6:2, 6:4, 6:5(3), 6:8, 6:11–13
MP.8	Express regularity in repeated reasoning.	6:4, 6:5(1), 6:6

Standards codes refer to www.corestandards.org. One purpose of the codes is that they may allow a task to shed light on the Standards cited for that task. Conversely, reading the cited Standards may suggest opportunities to extend a task or draw out its implications. Finally, Standards codes may also assist with locating relevant sections in curriculum materials, including materials aligned to comparable standards.

Math Milestones™

Math Milestones™ was created by Jason Zimba, John W. Staley, Elizabeth Meier, Sandra Alberti, Harold Asturias, and Phil Daro.

Math Milestones™ tasks are not designed for summative assessment. Used formatively, the tasks can reveal and promote student thinking. Student work on tasks could be collected in student portfolios.

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