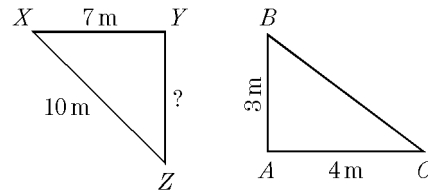


NCSCOS Math K-12 Samples

- Play a game in which there are many ways to win. For example, there are nine yellow blocks and one blue block. The object of the game is to collect one or two blocks at a turn, but not be the person who gets the blue block.
- Which would you use to measure the new pencil, the meter tape or the centimeter ruler? Why?
- Ask student to describe the next figure in a sequence such as:
* * / - / * * / - / *
- You need to find the cost of 25 five-cent stamps. Discuss at least three ways to figure this out.
- Sam is numbering the pages of his book. Page one is a right-hand page, page 2 is a left-hand page and faces page 3, a right-hand page. Will pages 10 and 11 face each other?
- Tell the steps you would use to find out the difference in the number of miles of interstate highway in North Carolina as compared with the total number of miles of North Carolina highways.
- Place 1 red cube, 1 yellow cube and 1 brown cube into a paper bag. Draw, without looking, one cube from the bag 10 different times. Record the results. Compare the results when 5 students' draws are combined, 10 students' draws, and the entire class's data.
- Mr. Adams has enclosed a square flower bed in his yard that measures 5 feet on a side. He decides to partition the square into 2 triangular parts by placing a row of bricks, each 1 foot long, diagonally through the square. Discuss how many bricks he should use and how they might best be arranged.

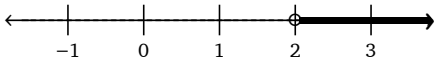
- Use a calculator to find the missing sides of these right triangles.



- A figure $ABCD$ has the following points: $A(-4, -2)$, $B(-2, 2)$, $C(1, 2)$, and $D(5, -2)$. Graph the new figure and use ordered pairs to write the four new coordinates if the figure is moved to the right 6 units and up 4 units.
- Which property would you use to simplify the computation in these two exercises?
 - $12 \times 8\frac{1}{2}$
 - $(3 \times 4) \times 75$
- In mixing the medicine for his new puppies, Sam is trying to decide if he can estimate the amount of water (80 mL each) for all 5 doses and mix the medicine for all puppies at once. Would it be appropriate to measure once and estimate the remaining amounts?
- Take temperature readings from a thermometer immersed in hot water in 2 minute intervals for 20 minutes. Record your findings on a scatter plot with times as the x coordinates and temperatures to the nearest tenth of a Celsius degree as the y coordinates.
- The ratio of left-handed people to right-handed people in Mr. Parker's class is 2 to 8. What percent of the total number of students are left-handed?
- The Jones family spent 12% of their family budget on clothes and 25% on food. What fractional part of their budget did they spend in each category?

16. Write a problem that could be represented by the equation $n + 9 = 21$. Solve and explain.

17. Write an inequality which has the solution set graphed.



18. A local jeweler began a sale on Monday. It was 70% off the ticket price. The following Friday he advertised an additional 35% off the original ticket price. Do you find this hard to believe? Explain.

19. Which ordered pair lies on the graph of the line $2x + 5y = 4$?

- a) $(-3, 2)$ b) $(3, -2)$ c) $(\frac{1}{2}, -1)$ d) $(-\frac{2}{5}, 0)$

20. Multiply: $(\sqrt{3} + 1)(\sqrt{3} - 1)$

- a) -2 b) $2\sqrt{3}$ c) $-2\sqrt{3}$ d) 2

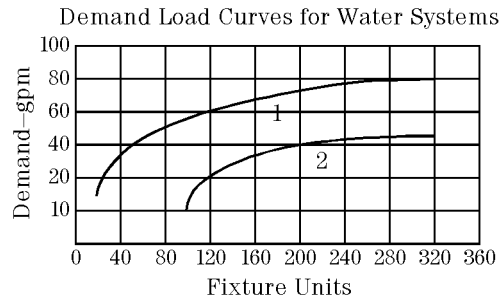
21. To make lemonade, empty a 6-ounce can of frozen lemonade into a pitcher and add three cans of cold water. If you double this recipe, what is the smallest size pitcher that would hold the lemonade mixture?

- a) pint b) half-gallon
c) quart d) gallon

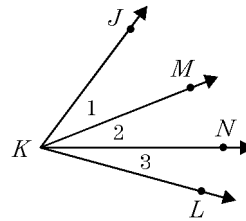
22. From the graph determine the difference in gallons per minute for 140 flush valve units compared to 140 tank valve units.

#1 represents a system predominantly of flush valves.

#2 represents a system predominantly of tank valves.



23. Given: $m\angle 1 = m\angle 3$ and $m\angle MKL = 78$. Find: $m\angle JKN$. Explain how you reached your conclusion.



24. Write an equation for a tangent to the graph of $y = \arcsin\left(-\frac{x}{2}\right)$, where x and y are both equal to zero.

- a) $x + 2y = 0$ b) $x - y = 0$
c) $x = 0$ d) $y = 0$

25. A business finds that on the interval $t = [0, 12]$, where t is given time in months, its profit is given by the function $P(t) = t^3 - 26t^2 + 148t$. At what time is its profit a maximum?