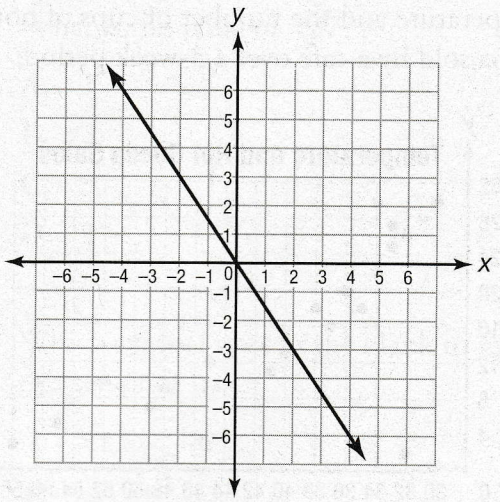
9. What is the equation for the line graphed below?



A. $y = -\frac{3}{2}x$

B. $y = -\frac{2}{3}x$

C. $y = \frac{2}{3}x$

D. $y = \frac{3}{2}x$

10. Which formula below describes a linear function?

A. area of a square with sides s units long: $A = s^2$

B. surface area of a sphere with radius r units long: $A = 4\pi r^2$

C. perimeter of a square with sides s units long: $P = 4s$

D. volume of a cube with edges s units long: $V = s^3$

11. A rectangular flower bed has a length of 0.005 kilometer and a width of 8×10^{-3} kilometer. What is the area of the flower bed, in square kilometers?

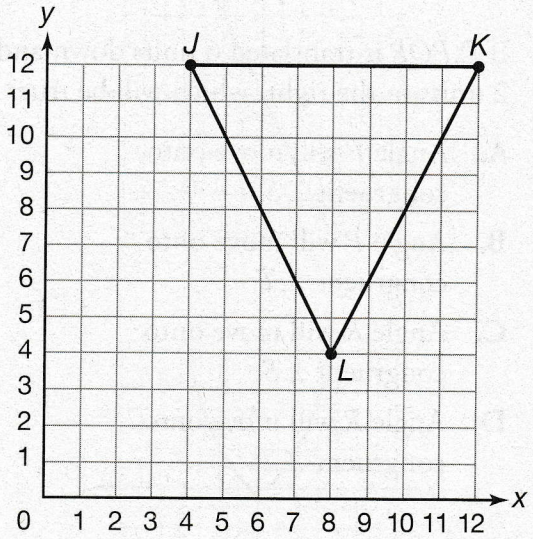
A. 4×10^{-7} square kilometer

B. 4×10^{-6} square kilometer

C. 4×10^{-5} square kilometer

D. 4×10^{6} square kilometers

12. Triangle JKL below will be dilated with the origin as the center of dilation and a scale factor of $\frac{1}{4}$.



What will be the coordinates of the vertices of the dilated image, $\triangle J'K'L'$?

A. $J'(16, 48)$, $K'(48, 48)$, $L'(32, 16)$

B. $J'(1, 12)$, $K'(3, 12)$, $L'(2, 4)$

C. $J'(1, 3)$, $K'(3, 3)$, $L'(4, 2)$

D. $J'(1, 3)$, $K'(3, 3)$, $L'(2, 1)$

13. What is the value of $4^5 \div 4^2$?

A. 81

B. 64

C. 16

D. 12

14. Last semester, Mr. Oppenheim collected data to determine the association between the number of hours that students played video games the night before a test and students' test scores. The equation $y = 100 - 10x$ was a good linear model for determining y, a student's score on the test, after playing video games for x hours the night before. What association is shown by the linear model?

A. Each additional hour of video game playing decreases a student's test score by 10 points.

B. Each additional hour of video game playing increases a student's test score by 10 points.

C. The number of hours spent playing video games has no effect on students' test scores.

D. A student would need to play video games for 100 hours in order to have his or her test score affected.

15. A fully inflated beach ball has a diameter of 16 inches. Which is closest to the amount of air inside the ball?

A. 268 $in.^3$

B. 1,072 $in.^3$

C. 2,144 $in.^3$

D. 17.149 $in.^3$

16. Compare the rates of change for the two functions described below.

Function 1 is represented by the equation $y = 3x - 6$.

The table below represents Function 2.

x	−2	0	2	4	6
y	−14	−6	2	10	18

Which statement about the two functions is true?

A. Both functions have the same rate of change.

B. Function 1 has a greater rate of change than Function 2.

C. Function 2 has a greater rate of change than Function 1, and both functions have different y-intercepts.

D. Function 2 has a greater rate of change than Function 1, but both functions have the same y-intercept.

17. Which best describes the solution for this equation?

$$8p - 12 = 4(2p - 12)$$

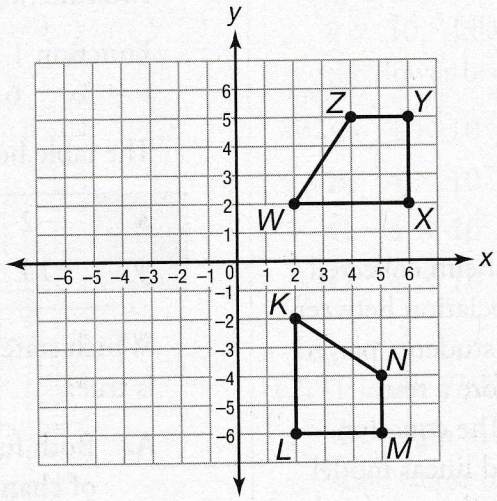
A. $p = \frac{3}{2}$

B. $p = 6$

C. no solution

D. infinitely many solutions

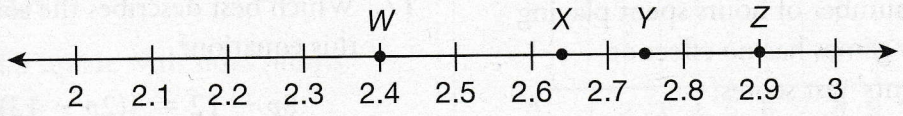
18. Trapezoid *KLMN* and trapezoid *WXYZ* are shown on the coordinate grid below.



If trapezoid *KLMN* is rotated 90° counterclockwise about the origin, onto which congruent line segment will $\overline{KL}$ move?

A. $\overline{WX}$
B. $\overline{XY}$
C. $\overline{YZ}$
D. $\overline{ZW}$

19. Which point on the number line best represents $\sqrt{7}$?



A. point *W*
B. point *X*
C. point *Y*
D. point *Z*

20. Solve the system of linear equations.

$$3x - 4y = 4$$
$$3x - 4y = -8$$

A. $(0, -1)$

B. $(4, -1)$

C. no solution

D. infinitely many solutions