

Name \_\_\_\_\_

1 How is the number below written in scientific notation?

80

- A  $8 \times 10^2$
- B  $80 \times 10^2$
- C  $80 \times 10^1$
- D  $8.0 \times 10^1$

2 A global study of sea life has recorded 232,620 different species of animals. What is this number of species written in scientific notation?

- A  $2,3262 \times 10^5$
- B  $2.3262 \times 10^2$
- C  $2.3262 \times 10^5$
- D  $2.3262 \times 10^6$

3 On average, the people in the United States use about  $2.53 \times 10^6$  plastic bottles every hour. What is this amount written in standard form?

- A 25.30 bottles
- B 25,330 bottles
- C 253,300 bottles
- D 2,530,000 bottles

4 Each human hair has a width of about  $6.5 \times 10^{-4}$  meter. What is this width written in standard form?

- A 0.00065 m
- B 0.000065 m
- C 0.0000065 m
- D 0.00000065 m

5 Alex is writing a number in scientific notation. The number is greater than one million and less than ten million. Which number will Alex use as the exponent of 10?

- A 8
- B 7
- C 6
- D 5

6 Which of the following lists shows the numbers below in order from **greatest to least**?

- A 0.56,  $5 \times 10^{-4}$ ,  $6 \times 10^{-2}$ , 0.006, 0.065
- B 0.56,  $6 \times 10^{-2}$ , 0.065, 0.006,  $5 \times 10^{-4}$
- C 0.56,  $6 \times 10^{-2}$ , 0.006, 0.065,  $5 \times 10^{-4}$
- D 0.56, 0.065,  $6 \times 10^{-2}$ , 0.006,  $5 \times 10^{-4}$

7 Russia has estimated natural gas reserves of  $5.5 \times 10^{13}$  cubic meters. The United States has estimated reserves of  $9.0 \times 10^{12}$  cubic meters. What are the combined natural gas reserves of the two countries?

- A  $6.4 \times 10^{12}$
- B  $6.4 \times 10^{13}$
- C  $6.4 \times 10^{14}$
- D  $6.4 \times 10^{25}$

8 How is the number below written in scientific notation?

120

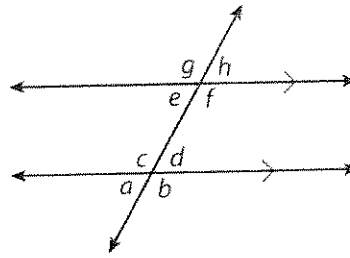
- A  $1.2 \times 10^1$
- B  $12 \times 10^1$
- C  $1.2 \times 10^2$
- D  $12 \times 10^2$

9 The mass of Earth in kilograms is  $5.97 \times 10^{24}$ , and the mass of the Moon is  $7.35 \times 10^{22}$ . What is the sum of the masses of Earth and its moon?

- A  $6.0435 \times 10^{22}$
- B  $6.0435 \times 10^{23}$
- C  $6.0435 \times 10^{24}$
- D  $6.0435 \times 10^{46}$

11. Erica wrote the number  $3.24 \times 10^{-3}$  in standard form. Which number did she write?

- A 0.00324                      C 0.324  
 B 0.0324                        D 3,240



15. Which angle pair is a pair of corresponding angles?

- A  $\angle h$  and  $\angle c$   
 B  $\angle b$  and  $\angle f$   
 C  $\angle b$  and  $\angle d$   
 D  $\angle a$  and  $\angle f$

16. Which of the following is equivalent to  $5^{-3}$ ?

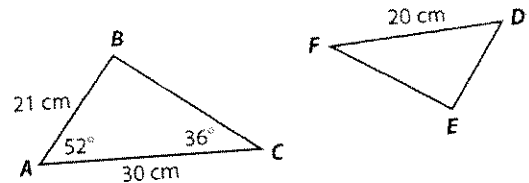
- A -125                              C  $\frac{1}{125}$   
 B  $-\frac{1}{125}$                          D 125

10. Which angle pair is a pair of alternate interior angles?

- A  $\angle d$  and  $\angle h$   
 B  $\angle c$  and  $\angle e$   
 C  $\angle d$  and  $\angle e$   
 D  $\angle e$  and  $\angle f$

12. Which expression represents 81?

- A  $3^3$                                       C  $3^5$   
 B  $3^4$                                       D  $3^6$



7. What is the measure of  $\angle DEF$ ?

- A  $88^\circ$                                       C  $92^\circ$   
 B  $90^\circ$                                       D  $128^\circ$

13. Which of the following lists shows the numbers below in order from **least** to **greatest**?

$0.65, 6 \times 10^{-4}, 6 \times 10^{-2}, 0.065$

- A  $6 \times 10^{-4}, 6 \times 10^{-2}, 0.065, 0.65$   
 B  $0.65, 0.065, 6 \times 10^{-2}, 6 \times 10^{-4}$   
 C  $6 \times 10^{-2}, 6 \times 10^{-4}, 0.065, 0.65$   
 D  $6 \times 10^{-4}, 0.065, 6 \times 10^{-2}, 0.65$

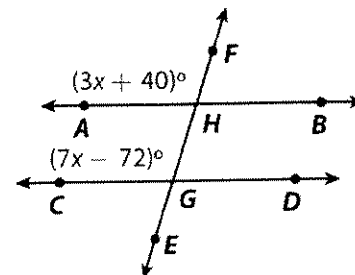
8. What is the length of line segment  $\overline{DE}$ ?

- A 7 cm                                        C 21 cm  
 B 14 cm                                      D 28 cm

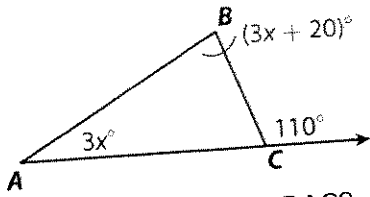
14. James wrote the number 8,980,000 in scientific notation. Which number did he write?

- A  $8.98 \times 10^{-6}$                       C  $89.8 \times 10^5$   
 B  $8.98 \times 10^{-5}$                       D  $8.98 \times 10^6$

19. The figure shows two parallel lines intersected by a transversal. What is the measure of  $\angle CGH$ ?



- A  $28^\circ$                                       C  $124^\circ$   
 B  $62^\circ$                                       D  $151^\circ$

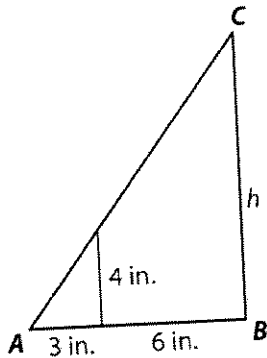


20. What is the measure of  $\angle BAC$ ?
- A  $15^\circ$                       C  $45^\circ$   
 B  $30^\circ$                       D  $70^\circ$

21. What is the measure of  $\angle ABC$ ?
- A  $15^\circ$   
 B  $45^\circ$   
 C  $65^\circ$   
 D  $70^\circ$

22. What is the measure of  $\angle ACB$ ?
- A  $15^\circ$   
 B  $45^\circ$   
 C  $65^\circ$   
 D  $70^\circ$

23. What is the value of  $h$  in the triangle shown below?



- A 9 in.  
 B 10 in.  
 C 12 in.  
 D 15 in.

24. The measures of three angles of a triangle are  $(2x)^\circ$ ,  $(3x)^\circ$  and  $(x + 60)^\circ$ . What is the value of  $x$ ?
- A 20                      C 40  
 B 30                      D 50

25. Carlos can type 228 words in 4 minutes. Which equation represents the number of words Carlos types per minute?

- A  $y = \frac{1}{228}x$                       C  $y = 57x$   
 B  $y = \frac{1}{57}x$                       D  $y = 228x$

26. Which equation shows a non-proportional relationship?

- A  $y = 4x + 0$                       C  $y = 4x + 5$   
 B  $y = -4x$                       D  $y = \frac{1}{4}x$

27. Which equation shows a non-proportional relationship?

- A  $y = -2x$   
 B  $y = \frac{1}{2}x$   
 C  $y = 2x + 0$   
 D  $y = 2x + 2$

28. Which of the following equations represents a proportional relationship?

- A  $y = 3x$                       C  $y = \frac{3}{x}$   
 B  $y = \frac{1}{2}x + 1$                       D  $y = x + \frac{1}{2}$

A cell phone company charges \$40 for the phone plus a monthly service charge of \$25. The equation below describes the cost  $y$  after  $x$  months.

$$y = 25x + 40$$

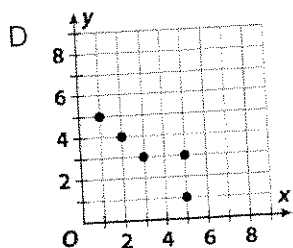
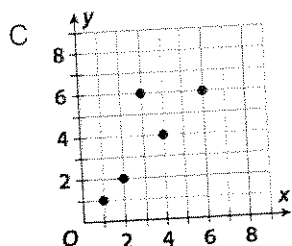
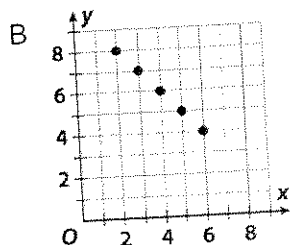
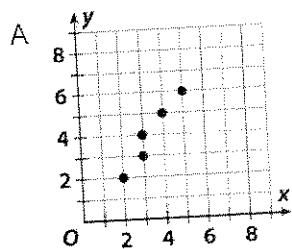
29. Which is true of the relationship between  $x$  and  $y$ ?

- A It is linear and proportional.  
 B It is linear and non-proportional.  
 C It is not linear and proportional.  
 D It is not linear and non-proportional.

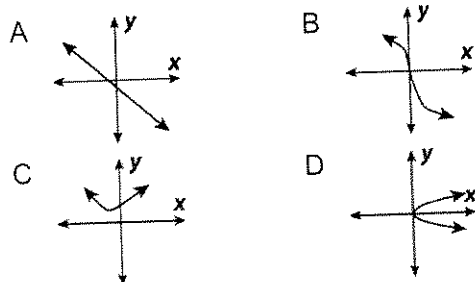
30) Which of the following sets of ordered pairs does **not** represent a function?

- A  $\{(1, 2), (2, 3), (4, 5), (3, 3)\}$
- B  $\{(-1, 3), (2, 3), (6, 5), (7, 3)\}$
- C  $\{(1, 2), (1, 3), (-4, 5), (3, 8)\}$
- D  $\{(-1, 2), (2, 2), (4, 2), (3, 2)\}$

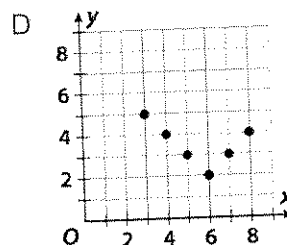
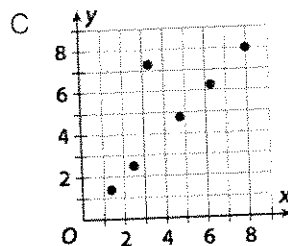
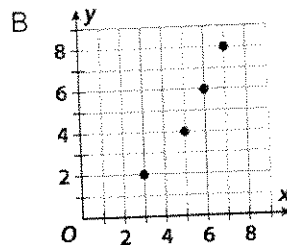
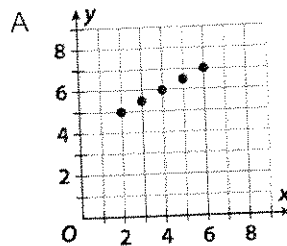
31) Which graph shows a linear relationship?



32) Which of the following graphs shows a linear relationship?



33) Which graph shows a linear relationship?



34) Which of the following tables represents a function?

A

x	1	1	4	5
y	2	5	2	6

B

x	1	-1	4	5
y	2	3	4	-3

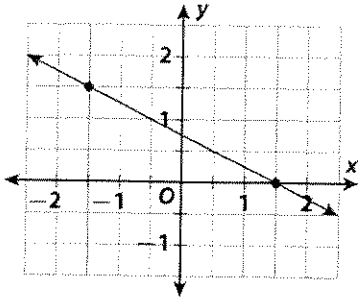
C

x	0	1	2	2
y	2	3	3	4

D

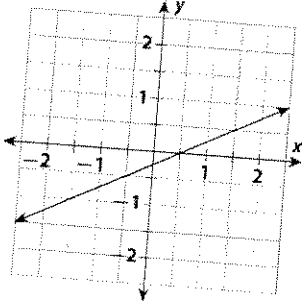
x	0	1	2	1
y	-1	0	1	3

35) What is the slope of the line below?



- A -2                      C  $\frac{1}{2}$   
 B  $-\frac{1}{2}$                   D 2

36) What is the slope of the line below?



- A -2                      C  $\frac{1}{2}$   
 B  $-\frac{1}{2}$                   D 2

37) What is the slope of the line described by the data in the table below?

x	-1	1	3	5
y	3	8	13	18

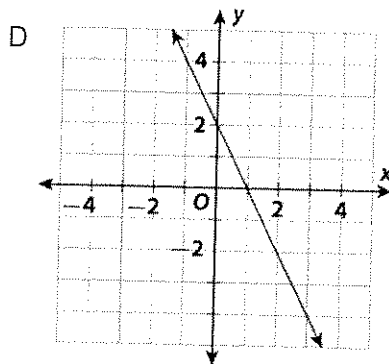
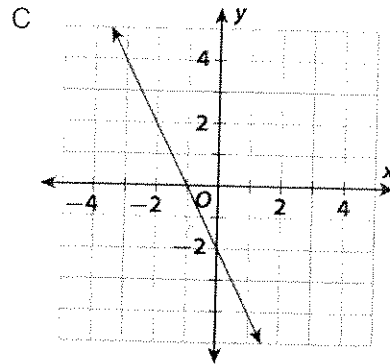
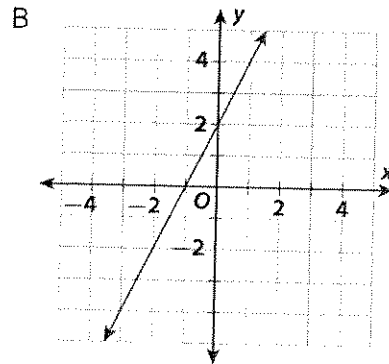
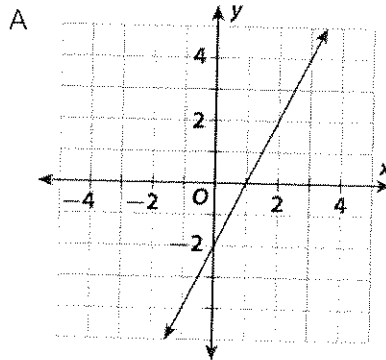
- A  $\frac{2}{5}$                       C  $\frac{5}{4}$   
 B  $\frac{2}{3}$                       D  $\frac{5}{2}$

38) A tank holds 50 cubic feet of gas to heat a home. The table shows the amount of gas left in the tank after each of five consecutive weeks. What is the rate of change?

Week	1	2	3	4	5
Gas (ft <sup>3</sup> )	44	38	32	26	20

- A -12 ft<sup>3</sup> per week  
 B -6 ft<sup>3</sup> per week  
 C 6 ft<sup>3</sup> per week  
 D 12 ft<sup>3</sup> per week

39) Which graph below shows a linear equation with a slope of 2 and a y-intercept of -2?

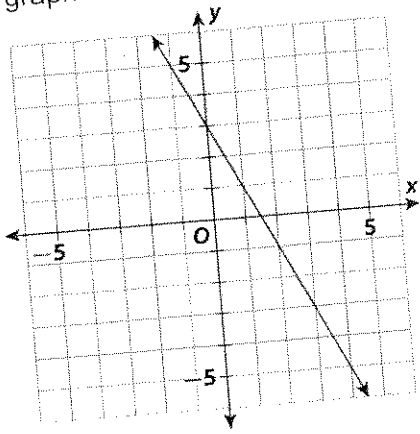


40) The table below represents a linear relationship.

x	2	3	4	5
y	4	7	10	13

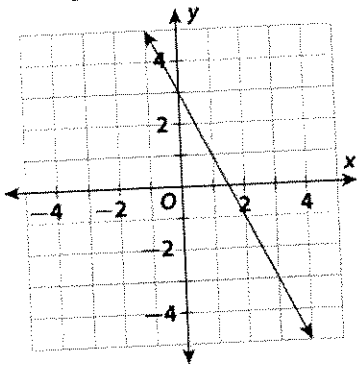
- What is the y-intercept of the line?  
 A -4                      C 2  
 B -2                      D 3

41 Which of the following is the equation of the graph shown below?



- A  $y = -2x + 3$
- B  $y = -2x + 1.5$
- C  $y = 2x + 3$
- D  $y = 2x + 1.5$

42 Which of the following is the equation of the line graphed below?



- A  $y = -2x + 3$
- B  $y = -2x + 5$
- C  $y = -3x + 3$
- D  $y = -3x + 2$

43 Which equation represents the relationship shown in the table below?

x	-2	0	2	4
y	-2	2	6	10

- A  $y = -2x$
- B  $y = -2x - 2$
- C  $y = x + 2$
- D  $y = 2x + 2$

44 Which equation shows the relationship in the table below?

x	5	8	9	11
y	10	16	18	22

- A  $y = 2x$
- B  $y = 3x$
- C  $y = 2x + 1$
- D  $y = 3x + 3$

45 Which equation represents the relationship shown in the table below?

x	-2	0	2	4
y	-13	-7	-1	5

- A  $y = -x - 9$
- B  $y = 3x - 7$
- C  $y = -7x$
- D  $y = -3x + 7$

46 Lexi earns \$7 for each pillow she sews. Which table represents this proportional relationship?

A

Pillows	3	6	9
Earnings (\$)	10	13	16

B

Pillows	4	6	8
Earnings (\$)	28	42	54

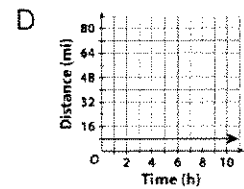
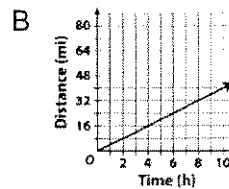
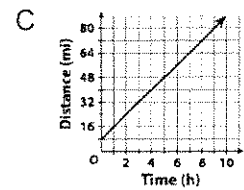
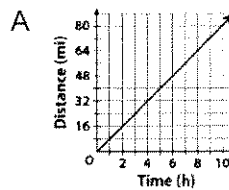
C

Pillows	5	7	9
Earnings (\$)	35	49	63

D

Pillows	6	8	10
Earnings (\$)	42	59	63

47 Alexander rides his bicycle at a speed of 8 miles per hour. Which graph represents this relationship?





58 A car and a truck are moving at the same speed. The car drives 2 hours. The truck continues for another half hour at the same speed and goes 20 more miles. What is the speed at which the car and the truck were traveling?

- A 10 mph
- B 20 mph
- C 40 mph
- D 60 mph

59 The fees charged by two bicycle shops are shown in the table below.

Bicycle Rentals	Cost
Eastside Bikes	\$10 deposit plus \$20 per hr
Westside Bikes	\$25 deposit plus \$15 per hr

There is a certain number of rental hours at which the costs at the two shops are equal. Which equation below could you use to find that number of hours?

- A  $10 - 20x = 25 - 15x$
- B  $10x + 20 = 25x + 15$
- C  $20x + 10 = 15x + 25$
- D  $20x - 10 = 15x - 25$

60 Nabor has \$800 and is spending \$30 per week. Rashid has \$150 and is saving \$20 per week. In how many weeks will Nabor and Rashid have the same amount of money?

- A 5 weeks
- B 6 weeks
- C 11 weeks
- D 13 weeks

61 A cheetah's speed was timed over a 50-yard distance. The cheetah was clocked running 60 miles per hour. Which equation shows the relationship between the distance,  $y$ , and time,  $x$ , the cheetah runs?

- A  $y = 50x$
- B  $y = 60x + 50$
- C  $y = 50x + 60$
- D  $y = 60x$

62 Sid and Libby are planning to sell pies at a local fair. They spend \$200 to rent a table at the fair. Their costs for ingredients, other supplies, baking, and packaging are \$3.00 per pie. Sid and Libby plan to sell the pies for \$8 each. How many pies must they sell at the fair before they start making a profit?

- A 32 pies
- B 40 pies
- C 64 pies
- D 80 pies

63 Alyssa found two different companies to fix her leaky roof. To compare their rates, she made the table shown below.

Company	Rate
Drip No More	\$50 plus \$80 per hr
Ready Roofer	\$75 plus \$70 per hr

Alyssa estimates she needs 3 hours of repair work. She chooses the company that is less expensive for the 3 hour job. How much will Alyssa spend on the roof repair?

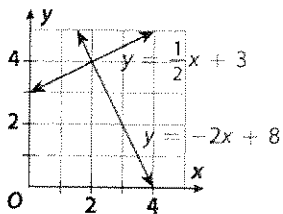
- A \$210
- B \$240
- C \$285
- D \$290

64 Lourenço analyzed prices of laptop computers based on the speed of the processor. He calculated the trend line to be  $y = 101x + 207.85$ , where  $x$  is the speed of the processor in gigahertz and  $y$  is the price. Which amount below is closest to the price of a laptop with a processor speed of 2.5 gigahertz?

- A \$309
- B \$455
- C \$460
- D \$620



- 65) What is the solution of the system of equations graphed below?



- A (-1, 1)                      C (2, 2)  
B (2, 4)                         D (0, 3)

- 66) Which of the following best describes the number of solutions to the system of equations shown below?

$$\begin{cases} 2x + 3 = y \\ -4y + 8x = -12 \end{cases}$$

- A no solutions  
B one solution  
C two solutions  
D infinite solutions

- 67) What is the solution to the system of equations shown below?

$$\begin{cases} 3x - y = 6 \\ 6x + y = 12 \end{cases}$$

- A (-2, 0)                      C (0, 2)  
B (0, -2)                     D (2, 0)

- 68) What is the solution to the system of equations shown below?

$$\begin{cases} -2x + 5y = -12 \\ 4x + 3y = -2 \end{cases}$$

- A (-2, 1)                      C (-1, -2)  
B (-1, 2)                     D (1, -2)

- 69) What is the value of  $x$  in the solution to the system of equations shown below?

$$\begin{cases} 7x + y = 14 \\ -2x - 6 = y \end{cases}$$

- A -7                              C 4  
B -4                              D 7

- 70) Which expression can you substitute in the indicated equation to solve the system of equations shown below?

$$\begin{cases} 4x + 3y = 4 \\ 3x + y = -2 \end{cases}$$

- A  $-3x - 2$  for  $y$  in  $4x + 3y = 4$   
B  $-3x + 2$  for  $y$  in  $4x + 3y = 4$   
C  $3x - 2$  for  $y$  in  $4x + 3y = 4$   
D  $3x + 2$  for  $y$  in  $4x + 3y = 4$

- 71) Which expression can you substitute in the indicated equation to solve the system of equations shown below?

$$\begin{cases} x + 2 = -2y \\ 3x - 2y = 10 \end{cases}$$

- A  $-2y - 2$  for  $x$  in  $3x - 2y = 10$   
B  $-2y + 2$  for  $x$  in  $3x - 2y = 10$   
C  $2y - 2$  for  $x$  in  $3x - 2y = 10$   
D  $2y + 2$  for  $x$  in  $3x - 2y = 10$

- 72) Which step could you use to start solving the system of equations shown below?

$$\begin{cases} 2x - 3y = 27 \\ 11x + 6y = 21 \end{cases}$$

- A Multiply  $2x - 3y = 27$  by 2 and subtract it from  $11x + 6y = 21$ .  
B Multiply  $2x - 3y = 27$  by 2 and add to  $11x + 6y = 21$ .  
C Add  $2x - 3y = 27$  to  $11x + 6y = 21$ .  
D Divide  $11x + 6y = 21$  by 2 and subtract it from  $2x - 3y = 27$ .

- 73) What is the solution to the system of equations shown below?

$$\begin{cases} y = -\frac{1}{2}x - 6 \\ 2y - 3x = -8 \end{cases}$$

- A (-1, -5.5)                      C (0, 3)  
B (-1, 5.5)                        D (0, 8)