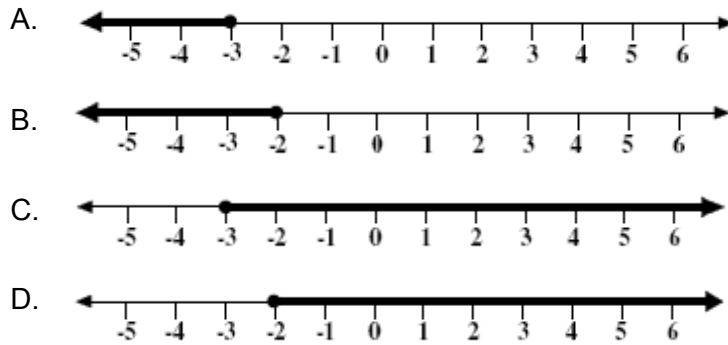# ALGEBRA I END-of-COURSE
PRACTICE

1. Which graph is the solution to the inequality

    $$2x \geq -6$$

    A.

    B.

    C.

    D.

2. Which of the following tables does **not** represent a functional relationship?

A

x	y
1	−9
2	−5
−1	9
−2	5

C

x	y
1	9
−1	−9
2	9
−2	−9

B

x	y
1	9
1	−9
2	5
2	−5

D

x	y
1	9
−1	5
2	−9
−2	−5

3. Shaniqua is constructing an isosceles triangle to use as a model in her Algebra class. The perimeter of her triangle is 24 inches. Shaniqua uses the equation $b = 24 - 2s$ to find b, the length of the triangle's third side, in terms of s, the length of each of its two congruent sides. What is her equation written in terms of s?

A. $s = 2(b + 24)$

B. $s = \dfrac{24 + b}{2}$

C. $s = 2(b - 24)$

D. $s = \dfrac{24 - b}{2}$

4. Each month Jessie's phone bill includes a $25 basic fee plus a charge of $.07 per minute for the number of minutes of long-distance calls she makes. Which equation best describes the total amount of Jessie's monthly phone bill, t, in terms of m, the number of minutes of long-distance calls she makes?

A. *t = 0.07 + 25m*

B. *t = 25 + 0.07m*

C. *t = 25(0.07m)*

D. *t = 25(7m)*

5. The pressure exerted on the floor by a person's shoe heel depends on the weight of the person and the width of the heel. The formula is

$$P = \dfrac{1.2W}{H^2} \, ,$$

where *P* is pressure in pounds per square inch, *W* is weight in pounds, and *H* is heel width in inches. Which of the following shows the pressure formula solved for *H*?

A. $H = \pm\sqrt{1.2WP}$

B. $H = \pm\sqrt{\dfrac{1.2W}{P}}$

C. $H = \pm\dfrac{1.2W}{P}$

D. $H = \dfrac{1.2W}{2P}$

6. Pauola was given the equation $y = -x + 3$. Which of the following is an equivalent representation of this equation?

   A. $f(x) = -x + 3$

   B. $f(y) = x$

   C. $y = -f(x) + 3$

   D. $f(y) = -x + 3$

7. Dr. Chait is considering joining the Garden Club. If he pays a $25 membership fee, he can buy rosebushes from the club at a reduced price of $10 each. If he does not join the club, he can buy rosebushes from a local nursery for $15 each. The graph below compares the cost of buying rosebushes from the Garden Club and from the local nursery.
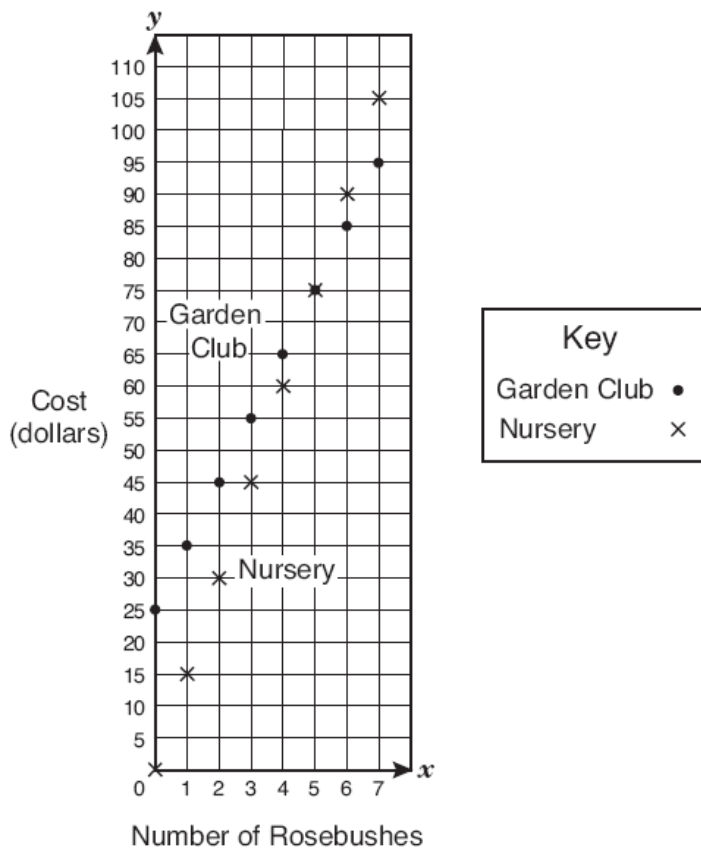
How many rosebushes will Dr. Chait have to buy from the Garden Club before he would begin to save money?

   A. 5

   B. 7

   C. 25

   D. 75

8. Diana is driving 182 miles to Orlando for a math convention. She has already driven x miles of the trip. If Diana drives below 70 miles per hour for the remainder of the trip, which inequality best represents the amount of time in hours, t, that it will take her to complete the remainder of her drive to Orlando?

A. $t < \dfrac{182 - x}{70}$

B. $t > \dfrac{70}{182 - x}$

C. $t < \dfrac{70}{182 - x}$

D. $t > \dfrac{182 - x}{70}$

9. The average daily high temperature for the month of May in Ocala, Florida is approximated by the function $f(n) = 0.2n + 80$, where n is the day of the month. May has 31 days. The maximum daily high temperature occurred on May 31st. What was the maximum temperature?

10. Guy keeps track of the amount of water he uses on his flower garden over the course of the summer. He finds that the less it rains, the more he needs to water the garden to keep his plants healthy and in bloom. This summer the two driest months were June and August, but it rained so heavily in September that he did not have to water his garden at all during that month. Which of the following graphs best represents Guy's water usage this summer?
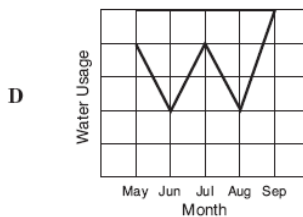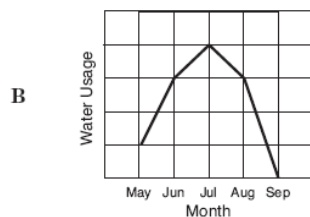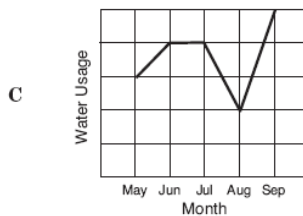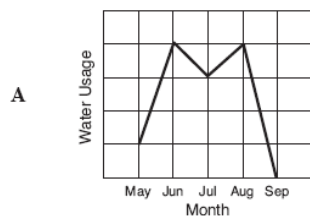
11. Alyssa is enrolled in a public-speaking class. Each week she is required to give a speech of greater length than the speech she gave the week before. The table below shows the lengths of several of her speeches.

Alyssa's Speeches

Week Number	3	4	5	6
Length of Speech (seconds)	150	180	210	240

If this trend continues, in which week will she give a 12-minute speech?

A. 22

B. 12

C. 15

D. 24

12. Brock is six feet tall. He climbs a ladder to paint some trim on his house. For each rung that he climbs, Brock is 1.2 feet higher above the ground. Which equation could you use to calculate the distance, *d,* from the top of Brock's head to the ground if *r* represents the number of ladder rungs he has climbed?

A. *d = 1.2r + 6*

B. *d = 1.2r*

C. *d = r +6*

D. *d = 6r + 1.2*

13. Which sequence uses the algebraic expression 4*n* + 5 to describe the relationship between a term in the sequence and its position, *n*, in the sequence?

A. 4, 9, 14, 19, 24 …

B. 4, 8, 12, 16, 20 …

C. 9, 13, 17, 21, 25 …

D. 9, 10, 11, 12, 13 …

14. Which expression is equivalent to the following expression?
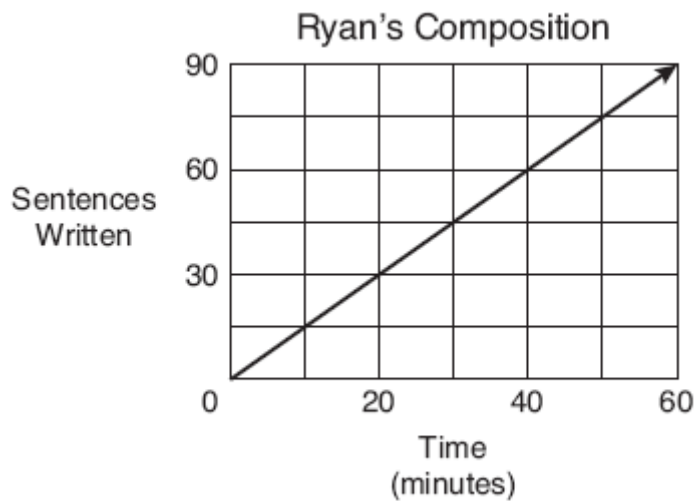
$$\frac{1}{2}x(4x-6)+3(x^2-1)$$

A. $5x^2 - 3x + 3$

B. $x^2 + 3x - 6$

C. $5x^2 - 3x - 3$

D. $-x^2 + 3x + 3$

15. What is the slope of the equation *2x – 5y = 10*?

    A. -2

    B. $\dfrac{2}{5}$

    C. 5

    D. $-\dfrac{2}{5}$

16. Ryan is writing a composition for homework. He decides to keep track of the number of sentences he writes compared to the time in minutes he works. The graph below shows the data he collected.

Ryan's Composition

At what rate does Ryan write his composition?

    A. 0.5 sentence per minute

    B. 1 sentence per minute

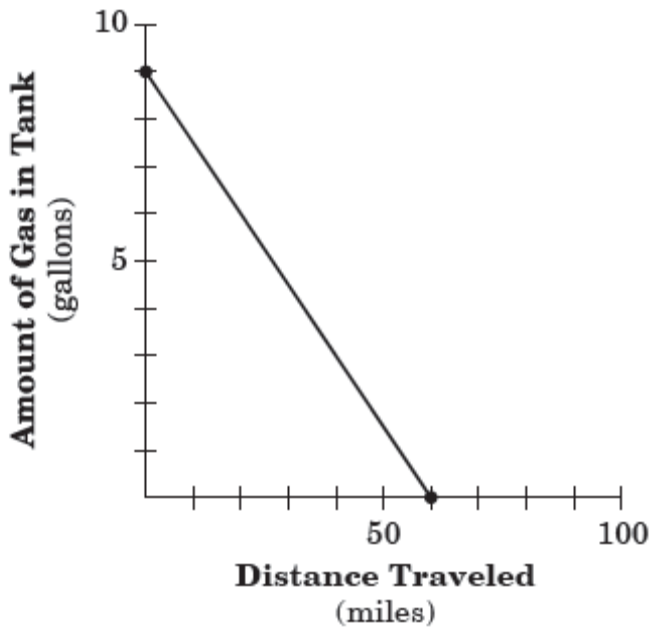   C. 1.5 sentences per minute

    D. 2 sentences per minute

17. Which of the following equations describes the same function in the table below?

x	y
2	8
3	13
4	18
5	23

A. $y = 5x - 2$

B. $y = \dfrac{1}{5}x - 2$

C. $y = 5x + 2$

D. $y = \dfrac{1}{5}x + 2$

18. According to the graph, which statement **best** describes the slope?

A. As the distance traveled increases by 20, the amount of gas in the tank decreases by 3.
B. As the distance traveled decreases by 3, the amount of gas in the tank increases by 20.
C. As the distance traveled increases by 30, the amount of gas in the tank increases by 2.
D. As the distance traveled decreases by 20, the amount of gas in the tank decreases by 3.

19. A South Dade farmer knows that the number of potatoes harvested varies directly with the number of potato plants grown. Last year the farmer harvested 189 potatoes from 9 potato plants. If the farmer plants 14 potato plants this year, how many potatoes can he expect to harvest?

    A. 21

    B. 23

    C. 294

    D. 2646

20. To which of the following situations can the function $y = 5x + 10$ best be applied?

    A. The number of miles a person walks if he walks for 5 hours at the rate of 10 miles per hour

    B. The total weight on a scale if 5 pounds is placed there initially and a series of 10-pound weights are added to it

    C. The total wages earned by a waiter who is paid $5 per hour and earns $10 in tips

    D. The combined length of 5 boards, each 10 feet longer than the width of a doorway

21. Gemma and her cousin went to a restaurant for dinner. Gemma's dinner cost $5 more than her cousin's. If their combined bill was under $25, which inequality best describes the cost of their dinners?

    A. $x + 5 < 25x$

    B. $x + (x + 5) < 25$

    C. $x + (x + 25) < 5$

    D. $x - (x + 5) < 25$

22. The population of Williston is currently 15,400 people. If the population increases at an average rate of 325 people per year, which equation could be used to find the approximate number of years it will take for the population to reach 18,000 people?

    A. $15,400 + 325n = 18,000$

    B. $325n = 18,000$

    C. $15,400n + 325 = 18,000$

    D. $15,400n = 18,000$

23. Dosset's Mobile Service Station uses the graph below to determine how much a mechanic should charge for labor for automobile repairs.

Labor Costs
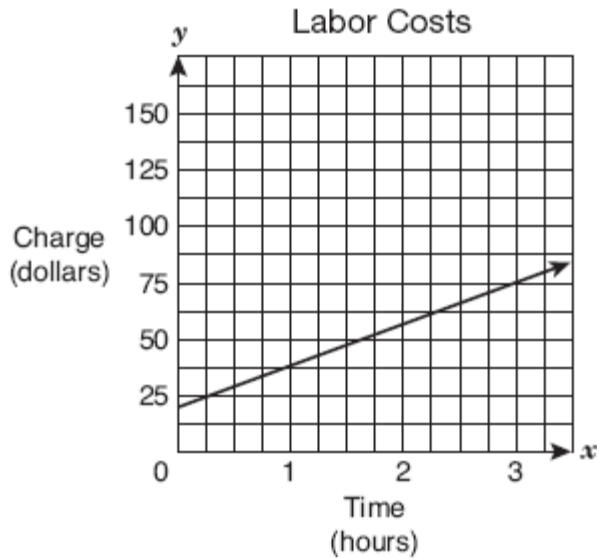
If the labor charge on an automobile repair bill was $67.50, for approximately how many hours, *h*, did the mechanic work?

A. 2.25 < *h* < 2.50

B. 2.75 < *h* < 3.00

C. 2.00 < *h* < 2.25

D. 2.50 < *h* < 2.75

24. The gas tank in Mina's car holds 15 gallons. Her car gets between 25 and 30 miles to the gallon. If Mina fills up the gas tank and then drives until she runs out of gas, what is the least number of miles she can drive?

A. 300 mi

B. 375 mi

C. 405 mi

D. 450 mi

25. The cost of renting a van for one day includes a flat rental fee plus a charge for each mile the van is driven while it is rented. A van that is driven 107 miles costs $97.15. A van that is driven 127 miles costs $106.15. What is the flat rental fee?

    A. $19.00

    B. $20.00

    C. $45.00

    D. $49.00

26. At a linen sale Mrs. Earle bought twice as many pillowcases for $2 each as sheets for $5 each. If she spent less than $40, not including tax, what is the maximum number of pillowcases she could have purchased?

    A. 3
    B. 4
    C. 6
    D. 8

27. Given the system of equations below:

$$3x - 2y = 12$$
$$4x - y = 11$$

   What is the value of *y* in the solution?

    A. -3

    B. -2

    C. 2

    D. 3

28. The area of a parallelogram is $35p^6q^6$ square units. If the base of the parallelogram measures $5pq^2$ units, what is the height of the parallelogram? ($p > 0$ and $q > 0$)

 A. $7p^5q^4$ units

 B. $7p^6q^3$ units

 C. $30p^5q^4$ units

 D. $30p^6q^3$ units

29. The side length of a square is $4x^3yz^4$ units. What is the area of the square?

 A. $8x^6y^2z^8$ square units

 B. $8x^9yz^{16}$ square units

 C. $16x^6y^2z^8$ square units

 D. $16x^9yz^{16}$ square units

30. Julia estimated that it would take her 4 hours to write a 4-page report. It actually took her only 38 minutes to write the first page of the report. If she keeps writing at this same rate, by how many hours and minutes did she overestimate the time it would take her to complete the report?

 A. 1 hour 28 minutes

 B. 2 hours 8 minutes

 C. 2 hours 28 minutes

 D. 2 hours 32 minutes

31. A student incorrectly solved the equation $3(2x + 6) - 4 = 14$ as shown below.

> Step 1: $6x + 6 - 4 = 14$
>
> Step 2: $6x + 2 = 14$
>
> Step 3: $6x = 12$
>
> Step 4: $x = 2$

In what step did the student first make a mistake?

A. In Step 1, the student should have multiplied both terms in parentheses by 3, not just the first term.

B. In Step 2, the student should have subtracted 4 from the right side of the equation, not the left side.

C. In Step 3, the student should have added 2 to both sides of the equation instead of subtracting 2.

D. In Step 4, the student should have multiplied both sides of the equation by 6 instead of dividing by 6.

32. Kroner asked 100 adults whether they had studied French, Spanish or Japanese in school.
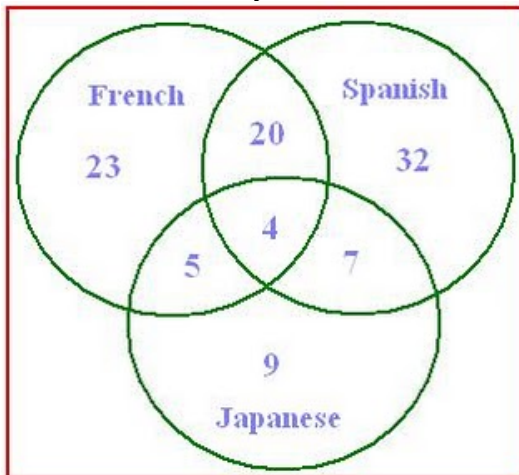
According to the Venn diagram how many adults had studied French and Spanish but not Japanese?