

Answer questions 1-35 on your Scantron.
Questions 1-30 will be scored for the Power Bowl event. In the event of a tie, questions 31-35 will be used as the tiebreaker.

1. Write 62 million in scientific notation.

- a. 62×10^6 b. 6.2×10^6 c. 6.2×10^{-6} d. 6.2×10^7 e. 62×10^{-7}

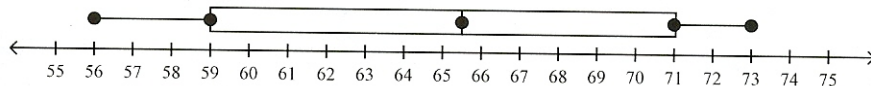
2. Evaluate: $6 + 4(8 - 3)^2 - 2(-3)^2$

- a. 82 b. 64 c. 38 d. NG e. 88

3. The last (ones) digit of a perfect square cannot be:

- a. 1 b. 4 c. 5 d. 6 e. 8

4. The box-and-whisker plot below shows the monthly high temperatures for San Francisco.



What was the median high temperature?

- a. 63°F b. 64°F c. 65.5°F d. 67°F e. NG

5. Which of the following tables of values represents a relation that is a function?

a.

x	y
-1	2
3	2
-3	6
4	-2

b.

x	y
-1	2
3	6
-1	6
4	-2

c.

x	y
-5	2
3	-3
-4	6
3	-2

d.

x	y
-7	2
-7	5
5	-7
4	-2

e. NG

6. In a rectangle with perimeter 30 cm and area 56 cm^2 , the longer side's length is ? cm more than that of the shorter side.

a. 1

b. 5

c. 20

d. 26

e. 2

7. Simplify: $\frac{(-2xy^2)^3}{6x^{-1}y^2}$

a. $\frac{-4x^4y^4}{3}$

b. $-2x^4y^4$

c. $\frac{-4x^2y^4}{3}$

d. $\frac{4x^2y^4}{3}$

e. $2x^4y^8$

8. If $\frac{2}{3}$ of a cup of fish food can feed 8 goldfish, then 4 cups of fish food should be able to feed ? goldfish.

a. 12

b. 24

c. 36

d. 48

e. 32

9. The stem-and-leaf plot below shows the amount of minutes that students in a class spent on homework.

Stem	Leaf
0	5 5 8 9
1	0 0 4 5 5 5 8
2	0 2 6 6 9
3	0 0 8
4	2 5 5
5	5 9
6	2

Key: 6|2 = 62 minutes

How many students are in the class?

- a. 6 b. 22 c. 25 d. 30 e. 32
10. Which of the following is the quadratic formula?
- a. $x = \frac{-b \pm \sqrt{b^2 + 4ac}}{2a}$ b. $x = \frac{b \pm \sqrt{b^2 - 4ac}}{2a}$ c. $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
- d. $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2}$ e. $x = \frac{b \pm \sqrt{b^2 + 4ac}}{2a}$
11. The flag is given a half-turn counterclockwise about the Point O and is then reflected in the dotted line. Which picture shows the correct final position of the flag?



- a.  b.  c.  d.  e. 

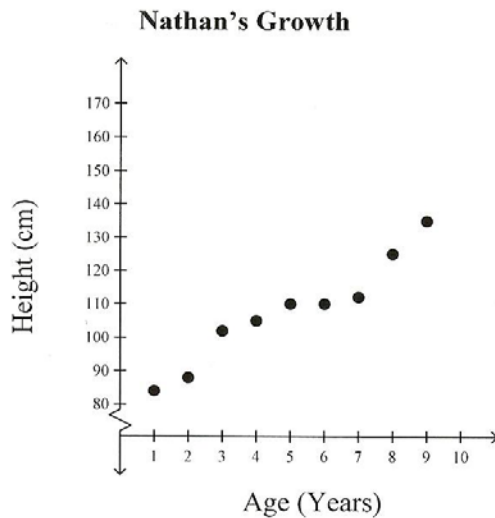
12. Cathy has 60 coins, all nickels and dimes. She has \$4.10 total. Which of the following equations could be used to find how many of each type of coin she has?

- a. $5x + 10(x + 60) = 410$ b. $x + (60 - x) = 410$ c. $5x + 10(60 - x) = 60$
- d. $5x + 10(60 - x) = 410$ e. $5x(10x) = 410$

13. A store marks up a jacket by 121%. The store's cost for the jacket is \$87.62. Find the selling price of the jacket.

- a. \$121.00 b. \$18.40 c. \$193.64 d. \$106.02 e. NG

14.



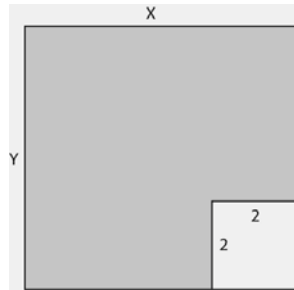
What type of relationship does the graph represent?

- a. positive relationship b. negative relationship c. no relationship d. a median e. NG

15. What is the equation, in slope-intercept form, of the line that has slope $\frac{3}{4}$ and passes through the point (4,-5)?

a. $y = \frac{3}{4}x - 17$ b. $y = \frac{3}{4}x - 2$ c. $y = \frac{3}{4}x + 2$ d. $y = \frac{3}{4}x - 8$ e. $y = \frac{3}{4}x - 5$

16. Write an expression to indicate the area of the shaded portion of the figure.



a. $x^2 + 4$ b. $2x + 4$ c. $x^2 - 4$ d. $2x - 4$ e. $x^2 - 8$

17. Write the sum as a decimal: $9000\% + 900\% + 90\% + 9\% =$

a. 9999.0 b. 999.9 c. 99.99 d. 0.9999 e. 9.999

18. What is the exact value of $\sqrt{7\frac{9}{16}}$?

a. $\frac{11}{2}$ b. $\frac{\sqrt{79}}{4}$ c. NG d. $\frac{3\sqrt{7}}{4}$ e. $\frac{11}{4}$

19. Which equation below represents a line that is parallel to $y = -3x + 2$?

- a. $y = 3x + 2$ b. $y = -3x + 4$ c. $y = 3x + 4$ d. $\frac{1}{3}x + 4$ e. $y = \frac{1}{3}x + 2$

20. Which inequality can be used to solve the following problem?

Mona rented a car for \$175 per week plus \$0.25 per mile. How far did Mona travel?

- a. $175 + 0.25m \leq 350$ b. $175 + 0.25m \geq 350$ c. $175 + 350 \leq 0.25m$
d. $350 + 0.25m \leq 175$ e. NG

21. In a 3-act play, each act has 4 scenes. If 2 new characters are introduced in each scene, how many characters are in this play?

- a. 6 b. 8 c. 12 d. 24 e. 9

22. Which of the following points lies on the line defined by $5x + 2y = 10$?

- a. (0,2) b. (2,0) c. (1,5) d. (-2,0) e. NG

23. When I add the measures of *any* 2 angles of triangle T, the sum is always 120° . Triangle T *must* be

- a. scalene b. right c. obtuse d. equiangular e. NG

24. The reciprocal of $\left(\frac{1}{2} \times 4\right)$ is

- a. $2 \times \frac{1}{4}$ b. $\frac{1}{2} \times 4$ c. $\frac{1}{2} \times \frac{1}{4}$ d. 2×4 e. $2 + \frac{1}{4}$

25. Factor completely: $4x^4 - 4$.

- a. $4(x^2 + 1)(x^2 - 1)$ b. $4(x^4 - 1)$ c. $4(x^2 + 1)(x + 1)(x - 1)$
d. $(2x^2 + 2)(2x^2 - 2)$ e. NG

26. If 3 of every 150 astronauts walk on the moon, then ? % of all the astronauts walk on the moon.

- a. 2 b. 3 c. 5 d. 50 e. 30

27. $(b^4)^6 \bullet (b^2)^4$

- a. b^{192} b. b^{32} c. $2b^{32}$ d. b^{15} e. b^{16}

28. Solve: $x^2 - 11x = 12$.

- a. 4, 3 b. -12, 1 c. 12, -1 d. -4, 3 e. 2, -6

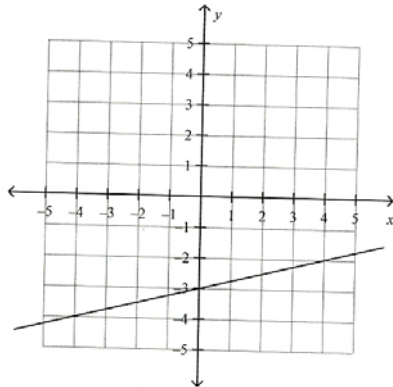
29. At most ? circles of radius 1 with non-overlapping interiors can fit inside a square with side-length 4.

- a. 1 b. 4 c. 5 d. 16 e. 2

30. A car travels 20 mi/h for 30 min and 45 mi/hr for 10 min. What total distance does the car travel?

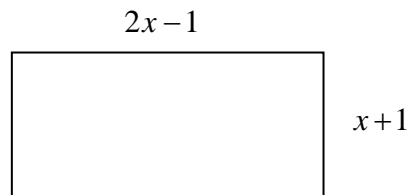
- a. 17.5 mi b. 10 mi c. 7.5 mi d. 2.5 mi e. 75 mi

31. Which of the following equations is parallel to the graph below?



- a. $y = \frac{1}{4}x + 3$ b. $y = \frac{1}{3}x + 2$ c. $y = -4x + 3$ d. $y = 4x + 5$ e. NG

32. Find an expression for the area of the rectangle.

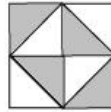


- a. $2x^2 + x - 1$ b. $3x$ c. $2x^2 - 1$ d. $6x$ e. $2x^2 + 3x - 1$

33. Simplify.

$$\sqrt{16^{16}} =$$

- a. 4^4 b. 4^8 c. 16^4 d. 16^8 e. 16^2
34. A square with a perimeter of 32 is split into 8 identical triangles, as shown. What is the sum of the areas of the 4 shaded triangles?



- a. 4 b. 8 c. 16 d. 32 e. 64
35. Which of the following is a difference of two squares?
- a. $x^2 + 11x + 18$ b. $x^2 - 10x + 25$ c. $x^2 - 9$ d. $x^2 + 36$ e. $x^2 + 9$