Name: _____ **Class:** _____ **Date:** _____ **ID: A**

Midterm Review

Multiple Choice
Identify the choice that best completes the statement or answers the question.

Write an algebraic expression for the verbal expression.

1. 35 less the product of 4 and x
   a. $35 + 4x$
   b. $4x \times 35$
   c. $35 \div 4x$
   d. $35 - 4x$

2. Evaluate the following expression if $a = 12$, $b = 5$, and $c = 4$.
   $3c + bc - 2a$
   a. 67
   b. 132
   c. 8
   d. 84

Simplify the expression.

3. $9x + 8(6x + 2)$
   a. $57x + 10$
   b. $57x + 2$
   c. $57x + 16$
   d. $15x + 10$

Translate the sentence into an equation.

4. Four times the number x increased by 15 is 83.
   a. $4x + 15 = 83$
   b. $4x - 15 = 83$
   c. $4x \times 15 = 83$
   d. $4x \div 15 = 83$

5. Four less than the product of eight and the number g is equal to ten more than g.
   a. $4 - 8g = 10 + g$
   b. $8g - 4 = 10g$
   c. $8g - 4 = 10 + g$
   d. $8(g - 4) = 10 + g$

Solve the equation. Then check your solution.

6. $-22 = -40 + r$
   a. -62
   b. 19
   c. 18
   d. -18

7. $2x + 7 = 79$
   a. 36
   b. 43
   c. $32\frac{1}{2}$
   d. -36

8. $\frac{a}{-7} - 7 = 5$
   a. 14
   b. -84
   c. 12
   d. 14.1

9. $-7m + 20 = -17m - 10$
   a. -3
   b. 3
   c. 1
   d. $1\frac{1}{4}$

10. $6 + 17z = 13z + 18$
    a. -3
    b. $\frac{2}{5}$
    c. 3
    d. 6

11. $6 = -2(10n + 7)$
    a. 1
    b. 0.4
    c. -1
    d. 0.05

Solve the equation or formula for the variable specified.

12. $3qr + 9t = 7u$ for r

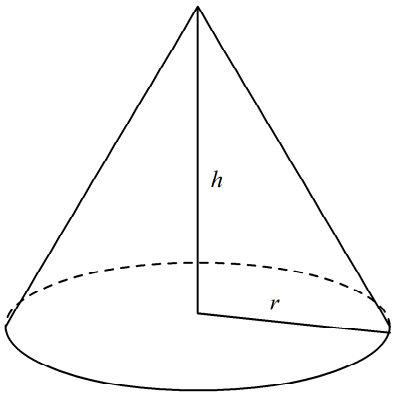
a. $r = \dfrac{7u + 9t}{3q}$

b. $r = 3q(7u - 9t)$

c. $r = \dfrac{7u - 9t}{3q}$

d. $r = \dfrac{7u - 9t}{q}$

Right Circular Cone

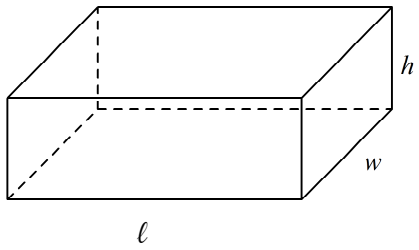


$$V = \frac{\pi r^2 h}{3}$$

13. What is the radius of a right circular cone with a volume of 800 cubic inches and a height of 12 inches. Round your answer to the nearest hundredth.
a. 7.98 inches
b. 8 inches
c. 7.98 square inches
d. 14.14 inches

14. What is the height of a right circular cone with a volume of 200 cubic inches and a radius of 5 inches? Round your answer to the nearest hundredth.
a. 7 inches
b. 7.64 inches
c. 7.64 cubic inches
d. 24 inches

The surface area of a rectangular solid is given by the formula $S = 2\ell w + 2\ell h + 2wh$, where ℓ = length, w = width, and h = height.



15. The surface area of a rectangular solid is 208 square inches. The length is 8 inches and the height is 4 inches. Find the width.
a. $11\frac{1}{3}$ inches
b. 18 inches
c. 6 inches
d. 5 inches

The circumference of a circle is given by the formula $C = 2\pi r$, where r is the measure of the radius.

16. Find the radius of a circle if the circumference is 25 inches. Use 3.14 for π, and round your answer to the nearest hundredth if necessary.
a. 3.98 inches
b. 157 inches
c. 4.17 inches
d. 3.78 inches

Solve the inequality.

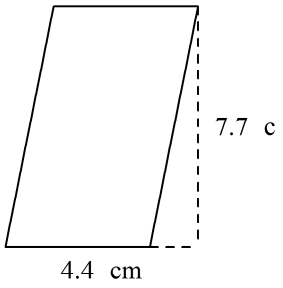
17. $\frac{-3b}{8} > -3$
    a. $b > -24$
    b. $b > -\frac{8}{3}$
    c. $b > 8$
    d. $b < 8$

18. $3a + 3 - 6a > 15$
    a. $a < -6$
    b. $a > 4$
    c. $a < -4$
    d. $a > -4$

19. $9 + 11c < 2(0.5c - 5)$
    a. $c > 1.4$
    b. $c < -1.9$
    c. $c > -1.9$
    d. $c < -1.4$

Find the area.

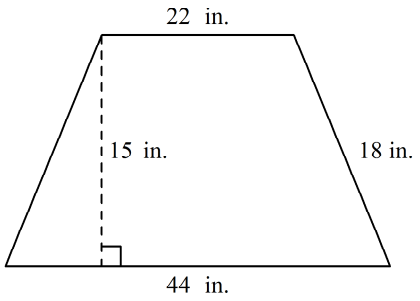
20.



Not drawn to scale

a. 12.1 cm^2
b. 33.88 cm^2
c. 24.2 cm^2
d. 67.76 cm^2

21.



Not drawn to scale

a. 165 in.^{2}
b. 495 in.^{2}
c. 330 in.^{2}
d. 594 in.^{2}

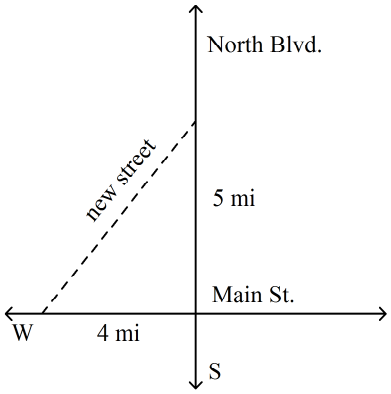
22. A sphere has radius 5 cm. Find the volume to the nearest hundredth.
    a. 130.9 cm^3
    b. 104.72 cm^3
    c. 314.16 cm^3
    d. 523.6 cm^3

23. Find the midpoint M of the segment with endpoints $C(4, 4)$ and $D(-2, 6)$
    a. $M(1, 5)$
    b. $M(2, 10)$
    c. $M(1, 10)$
    d. $M(2, 5)$

24. $\overline{CD}$ is the diameter of a circle. The coordinates of C are $(-3, 5)$ and the coordinates of D are $(6, -2)$. Find the center of the circle.
    a. $\left(\frac{3}{2}, \frac{3}{2}\right)$
    b. $\left(\frac{3}{2}, 3\right)$
    c. $(3, 3)$
    d. $\left(3, \frac{3}{2}\right)$

25. Find the distance between $(3, 4)$ and $(4, -6)$. If necessary, round to the nearest tenth.
    a. 10 units
    b. 101 units
    c. 7.3 units
    d. 53 units

26. The city commission wants to construct a new street that connects Main Street and North Boulevard as shown in the diagram. The construction cost has been estimated at $174 per linear foot. Estimate the cost for constructing the street.



a. $5,115,216
b. $469,054
c. $5,882,678
d. $588,268

Evaluate the expression for the given value of the variable(s).

27. $-2x^3 - x^2 + 5x + 2$; $x = -3$
a. –76
b. 62
c. 32
d. 30

Simplify by combining like terms.

28. $-3(-4y + 3) + 7y$
a. $19y - 9$
b. $10y$
c. $-19y + 3$
d. $-19y - 9$

Solve the equation or formula for the indicated variable.

29. $S = 5r^2t$, for t
a. $t = \frac{S}{5} - r$
b. $t = \frac{25r}{S}$
c. $t = r^2 - 5S$
d. $t = \frac{S}{5r^2}$

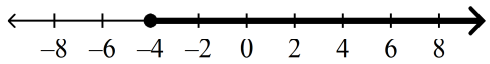
30. The formula for the time a traffic light remains yellow is $t = \frac{1}{8}s + 1$, where t is the time in seconds and s is the speed limit in miles per hour.
a. Solve the equation for s.
b. What is the speed limit at a traffic light that remains yellow for 4.5 seconds?

a. $s = 8t - 8$; $s = 28$ mi/h
b. $s = 8t$; $s = 36$ mi/h
c. $s = 8t - 1$; $s = 35$
d. $s = \frac{1}{8}t - 1$; $s = 28$ mi/h

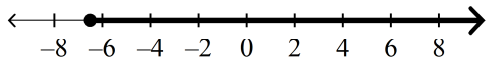
Solve the inequality. Graph the solution set.

31. $-4k + 5 \leq 21$

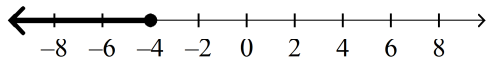
a. $k \geq -4$



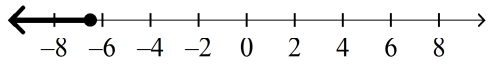
b. $k \geq -6\frac{1}{2}$



c. $k \leq -4$



d. $k \leq -6\frac{1}{2}$



Midterm Review
Answer Section

MULTIPLE CHOICE

1. D
2. C
3. C
4. A
5. C
6. C
7. A
8. B
9. A
10. C
11. C
12. C
13. A
14. B
15. C
16. A
17. D
18. C
19. B
20. B
21. B
22. D
23. A
24. A
25. A
26. C
27. C
28. A
29. D
30. A
31. A