Name_____   **Date**_____

Directions: Complete as many problems as you can in the 30 minutes allotted to you. No calculators! Figures are not drawn to scale. Do not assume any pair of line segments are congruent, parallel, or perpendicular unless specifically stated. You may assume all lines that appear straight are straight. Use 3.14 for π when necessary.

1. If $\overline{AB}\|\overline{CD}$, find the area of ABDC. All distances are in feet.

A   30   B

20

C   50   D
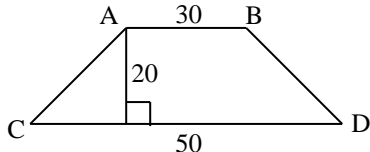
   (**A**) 40 ft.^{2} (**B**) 600 ft.^{2} (**C**) 800 ft.^{2} (**D**) 1200 ft.^{2} (**E**) 1600 ft.^{2}

2. What is the sum of the measures of the largest obtuse angle that is divisible by 9 and the complement of the largest acute angle that is divisible by 10?

   (**A**) 181°   (**B**) 191°   (**C**) 251°   (**D**) 261°   (**E**) 271°

3. Given X is on $\overline{AD}$ and Y is on $\overline{DE}$, which point is coplanar with points A, D, X and Y?

A

B

G

C

D

E   H
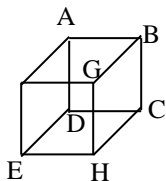
   (**A**) B   (**B**) E   (**C**) H   (**D**) G   (**E**) C

4. If 6 is the midpoint of x and 8, find the value of x.
   (**A**) 4   (**B**) 7   (**C**) 10   (**D**) 12   (**E**) 14

5. Find the diameter of a circle whose area is π square inches.

   (**A**) $\frac{1}{4}$ in.   (**B**) $\frac{1}{2}$ in.   (**C**) 1 in.   (**D**) 2 in.   (**E**) 4 in.

6. On a map, two cities are 10 inches apart. If 8 inches equals 96 miles, how far apart are the two cities?
   (**A**) 112 miles   (**B**) 114 miles   (**C**) 116 miles   (**D**) 118 miles   (**E**) 120 miles

7. In $\triangle XYZ$, $\overrightarrow{YW}$ bisects $\angle XYZ$ and $\overrightarrow{YT}$ bisects $\angle WYZ$. If $m\angle TYZ = 10°$, find the $m\angle XYW$.
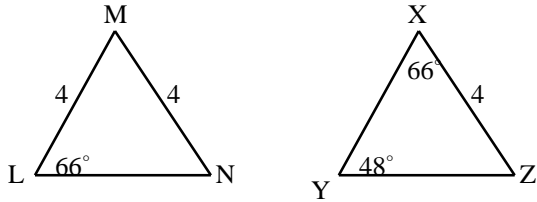
X

W

T

10°

Y   Z
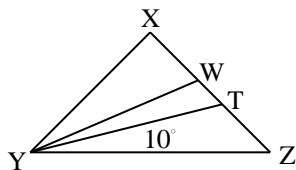
   (**A**) 10°   (**B**) 20°   (**C**) 25°   (**D**) 30°   (**E**) 40°
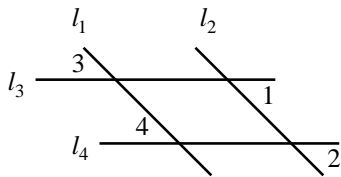
8. If $m\angle 1 = 20°$, $m\angle 2 = (150 - 3x)°$, and $m\angle 3 = 22°$, find the value of x.
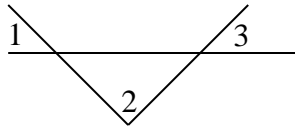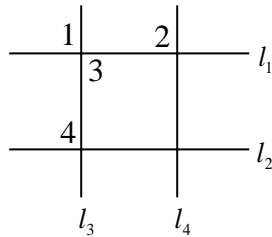

(A) 4   (B) 5   (C) 6   (D) 7   (E) 8

9. Which of the following choices must be true?

(A) $\Delta XYZ \cong \Delta MNL$ (B) $\Delta XYZ \cong \Delta LNM$ (C) $\Delta MLN \cong \Delta XYZ$ (D) $\Delta XYZ \cong \Delta LMN$ (E) not enough information

10. If $l_1 \| l_2$, what angle(s) must be congruent to $\angle 1$?

(A) $\angle 2$ (B) $\angle 3$ (C) $\angle 4$ (D) $\angle 2$ and $\angle 4$ (E) all angles are $\cong$

11. If $l_1 \| l_2$, which pair of *corresponding angles* must be congruent?

(A) $\angle 1$ and $\angle 2$ (B) $\angle 3$ and $\angle 4$ (C) $\angle 1$ and $\angle 3$ (D) $\angle 2$ and $\angle 3$ (E) $\angle 1$ and $\angle 4$

12. The base of a triangle is 10 inches, which is 4 less than the height. Find the area of the triangle.
(A) $20\,in^2$ (B) $30\,in^2$ (C) $60\,in^2$ (D) $70\,in^2$ (E) $140\,in^2$

13. Find the area of a square that has a perimeter of 32 inches.
(A) $16\,in^2$ (B) $32\,in^2$ (C) $64\,in^2$ (D) $256\,in^2$ (E) $1024\,in^2$

14. A pool with a circumference of 14π ft. has a 3 ft. wide deck around it. Find the area of the deck in square feet.
(A) $9\pi\ ft^2$ (B) $40\pi\ ft^2$ (C) $49\pi\ ft^2$ (D) $51\pi\ ft^2$ (E) $100\pi\ ft^2$

15. An angle has a measure that is 5 less than 4 times its complement. Find the measure of the angle.
(A) $19°$ (B) $71°$ (C) $73°$ (D) $75°$ (E) $118.3°$

16. If you change the radius of a sphere so that the radius is four times longer, by how much will the area of the sphere increase? The area of a sphere equals $4\pi r^2$.

(**A**) $64\pi r^2$ (**B**) $60\pi r^2$ (**C**) $48\pi r^2$ (**D**) $40\pi r^2$ (**E**) $34\pi r^2$

17. What type of triangle is this?
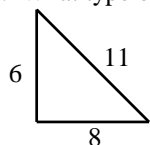
(**A**) isosceles   (**B**) equilateral   (**C**) acute   (**D**) scalene   (**E**) right

18. If you triple the base of a triangle and cut the height in half, how many times larger will the area of the triangle be?

(**A**) 0.5   (**B**) $\dfrac{2}{3}$ (**C**) 0.75   (**D**) 1.5   (**E**) 6

19. ABCD is a parallelogram and m $\angle$ B $= (x-4)^{\circ}$. Find m $\angle$ A.

(**A**) $(x-4)^{\circ}$ (**B**) $(176-x)^{\circ}$ (**C**) $(184-x)^{\circ}$ (**D**) $\left(\dfrac{360-x}{3}\right)^{\circ}$ (**E**) $\left(\dfrac{360-2x}{2}\right)^{\circ}$

20. Three edges of a cube add up to 1 foot. What is the volume of the cube in cubic inches?

(**A**) 1   (**B**) 27   (**C**) 36   (**D**) 64   (**E**) 1728

21. If you double the length of the base of a rectangle and triple the width, how many times larger will the area of the new rectangle be than the original one?

(**A**) 1.5   (**B**) 4   (**C**) 5   (**D**) 6   (**E**) 12

22. The difference between two supplementary angles is 36. What is the measure of the larger angle?

(**A**) 72° (**B**) 108° (**C**) 118° (**D**) 128° (**E**) 144°

23. A rectangular pool is 40 ft long, 20 ft wide, has a 5 ft depth, and has 3 ft of water in it . If the water is siphoned into another rectangular pool that is 25 ft long, how wide is the pool if the water is 4 ft high?

(**A**) 18 ft.   (**B**) 20 ft.   (**C**) 22 ft.   (**D**) 24 ft.   (**E**) 26 ft.

24. Circle A has an area nine times that of circle B. How many times longer is the diameter of circle A than the radius of circle B?

(**A**) 3   (**B**) 6   (**C**) 9   (**D**) 12   (**E**) 15

25. If the ratio of two corresponding sides of similar triangle is 2:5, what is the ratio of the areas?

(**A**) 2:5   (**B**) 3:10   (**C**) 3:14   (**D**) 4:21   (**E**) 4:25

GEOMETRY TEST 2 ANSWERS

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

1. $A = \dfrac{1}{2} \cdot 20(30+50) = 800$

2. $171° + 10° = 181°$

3. E. Therefore B.

4. $\dfrac{x+8}{2} = 6 \rightarrow x = 4$

5. $\pi = \pi r^2 \rightarrow r = 1 \rightarrow d = 2$

6. $10 \cdot \dfrac{96}{8} = 120$

7. $2 \cdot 10 = 20$

8. $m\angle 1 + m\angle 2 + m\angle 3 = 180° \rightarrow 20 + 150 - 3x + 22 = 180 \rightarrow x = 4$

9. not enough information

10. Vertical angles are congruent and corresponding angles are congruent if two parallel lines are cut by transversal. Therefore $\angle 3 \cong \angle 1$.

11. $\angle 1$ and $\angle 4$

12. $A = \dfrac{1}{2} \cdot 10 \cdot 14 = 70$

13. $A = s^2 = 8^2 = 64$

14. $14\pi = \pi d \rightarrow r = 7 \rightarrow A = 49\pi$, the area of the pool. The area of the deck and pool $= 100\pi$. The area of the deck $= 100\pi - 49\pi = 51\pi$

15. $x = 4(90 - x) - 5 \rightarrow x = 71°$

16. $A_{\text{after increase}} - A_{\text{before increase}} = 4\pi(4r)^2 - 4\pi r^2 = 64\pi r^2 - 4\pi r^2 = 60\pi r^2$

17. scalene

18. $A = \dfrac{1}{2}(3b)\left(\dfrac{1}{2}h\right) = \dfrac{3}{2}\left(\dfrac{1}{2}bh\right) = 1.5\left(\dfrac{1}{2}bh\right)$

19. Since consecutive interior angles are supplementary, $m\angle A = 180° - m\angle B = 180° - (x - 4°) = (184 - x)°$

20. The volume of the cube equals $e^3 = 4^3 = 64$ cubic inches.

21. $a = (2l)(3w) = 6lw$

22. $\begin{cases} x + y = 180 \\ x - y = 36 \end{cases} \rightarrow 2x = 216 \rightarrow x = 108,\ y = 72$

23. $w = \dfrac{40 \times 20 \times 3}{25 \times 4} = 24$

24. $\pi r_A^2 = 9\pi r_B^2 \rightarrow r_A = 3r_B \rightarrow \dfrac{1}{2}d_A = 3r_B \rightarrow d_A = 6r_B$

25. The ratio of the areas of two similar triangles equal the square of the ratio of any two corresponding sides.