GEOMETRY TEST 1

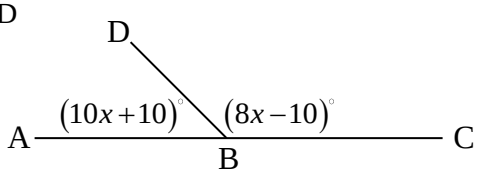
Name_____ Date_____

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. The area of a trapezoid is 40 square inches and one of its bases has a length of 4 inches. If the height of the trapezoid is 8 inches, find the length of the other base in inches.

(**A**) 2 (**B**) 3 (**C**) 4 (**D**) 5 (**E**) 6

2. Find $m\angle CBD$

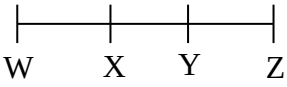


(**A**) 10° (**B**) 50° (**C**) 70° (**D**) 110° (**E**) 150°

3. Two obtuse adjacent angles will _____ be supplementary.

(**A**) always (**B**) usually (**C**) sometimes (**D**) seldom (**E**) never

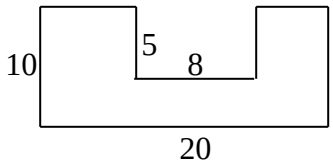
4. What is another name for $\overrightarrow{ZX}$?



I. $\overrightarrow{XZ}$ II. $\overrightarrow{ZW}$ III. $\overrightarrow{ZY}$

(**A**) I (**B**) I and II (**C**) I and III (**D**) II and III (**E**) I, II, and III

5. Find the area of the following figure. Assume consecutive sides are perpendicular.

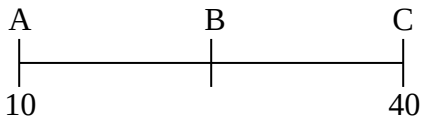


(**A**) 150 (**B**) 160 (**C**) 164 (**D**) 168 (**E**) 172

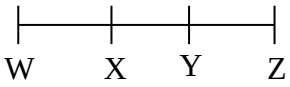
6. The distance around a circular pool is 16π ft. Find the area of the pool.

(**A**) $8\pi \text{ ft}^2$ (**B**) $16\pi \text{ ft}^2$ (**C**) $64\pi \text{ ft}^2$ (**D**) $144\pi \text{ ft}^2$ (**E**) $256\pi \text{ ft}^2$

7. If B is the midpoint of $\overline{AC}$, find the value of $2B-1$.



(**A**) 49 (**B**) 59 (**C**) 69 (**D**) 79 (**E**) 99



8. If $WX=4$, $WY=10$, and $WZ=18$, find $YZ-XY$.

(**A**) 1 (**B**) 2 (**C**) 3 (**D**) 4 (**E**) 5

9. How many planes can pass through a line and a given point on the line?

(**A**) 0 (**B**) 1 (**C**) 2 (**D**) 3 (**E**) an infinite number

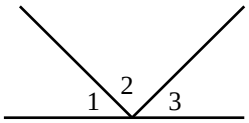
10. Two distinct intersecting lines intersect at

(**A**) 1 point (**B**) 2 points (**C**) 3 points (**D**) 4 points (**E**) an infinite number of points

11. A circular pool has a radius of 12 feet and contains a rectangular raft with an area of 12 square feet. What surface area of the water is not covered by the raft? All units are in square feet.

(**A**) 12π (**B**) $24\pi - 12$ (**C**) $144\pi - 12$ (**D**) 132 (**E**) 132π

12. If $m\angle 1 = \frac{60^\circ}{x}$, $m\angle 2 = \frac{40^\circ}{x}$, and $m\angle 3 = \frac{80^\circ}{x}$, find the value of $\sqrt{4x^4}$. Assume $x \neq 0$

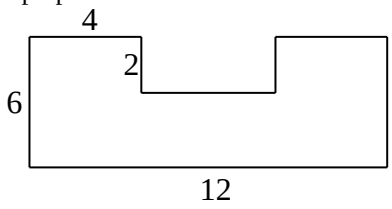


(**A**) 1 (**B**) 2 (**C**) 4 (**D**) 8 (**E**) 16

13. On a certain map, four-fifths of an inch equals 50 miles. If two cities are 250 miles apart, how far apart will they be on a map?

(**A**) 4 inches (**B**) 4.5 inches (**C**) 4.8 inches (**D**) 5 inches (**E**) 5.8 inches

14. Find the perimeter. Each distance is measured in inches and consecutive sides are perpendicular.



(**A**) 36 inches (**B**) 38 inches (**C**) 40 inches (**D**) 42 inches (**E**) 44 inches

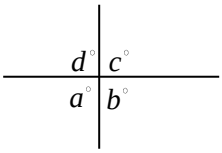
15. If $l_1 \| l_2$, $l_2 \perp l_3$, $l_3 \| l_4$, and $l_4 \perp l_5$, which of the following is true? Assume all lines are coplanar.

(**A**) $l_3 \| l_1$ (**B**) $l_2 \perp l_5$ (**C**) $l_1 \| l_4$ (**D**) $l_5 \| l_1$ (**E**) $l_2 \| l_4$

16. For ΔABC, $m\angle A = 158^\circ$ and $m\angle B = x^\circ$. Find $m\angle C$?

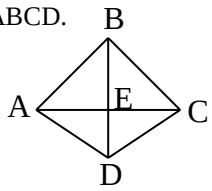
(**A**) $(22 - x)^\circ$ (**B**) $(32 - x)^\circ$ (**C**) $(32 + x)^\circ$ (**D**) $(42 - x)^\circ$ (**E**) $(42 + x)^\circ$

17. If $15d + 2c - 7 = 753 + 3b$, find *d*.



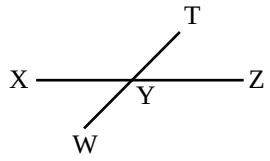
(**A**) 30 (**B**) 40 (**C**) 50 (**D**) 60 (**E**) 70

18. Given $\overline{BD} \perp \overline{AC}$, $BE = 10$, $ED = 6$, and $AC = 20$. Find the area of ABCD.



(**A**) 160 (**B**) 200 (**C**) 220 (**D**) 260 (**E**) 300

19. If Y is the midpoint of $\overline{WT}$ and $\overline{XZ}$, which of the following is not true?



(**A**) $\frac{XZ}{1.9} > YZ$ (**B**) $1.99(WY) < WT$ (**C**) $\frac{WT}{2.1} < YT$ (**D**) $\frac{1}{3}(XY) = \frac{1}{6}(XZ)$ (**E**) all are true

20. If the area of a circle is 24.267 square inches, what is the ratio of the area to the radius squared? Round the answer to the nearest whole number.

(**A**) 1 (**B**) 2 (**C**) 3 (**D**) 4 (**E**) 5

21. What is the absolute value of the difference between 2 times the sum of an angle and its supplement and 3 times the sum of the angle and its complement?

(**A**) 45° (**B**) 60° (**C**) 90° (**D**) 120° (**E**) 180°

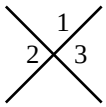
22. A rectangle has the same area as a triangle. If the length of the rectangle is the same as the length of the base of the triangle, what is the ratio of the width of the rectangle to the height of the triangle?

(**A**) 2:1 (**B**) 4:1 (**C**) 1:2 (**D**) 1:3 (**E**) 1:4

23. If you triple the radius of a cone and change the slant height so that it is one-third of what it was before, by how much will the total area of the cone increase? The total area of a cone equals $rl\pi + \pi r^2$ where *r* is the radius and *l* is the slant height.

(**A**) 0 (**B**) $5\pi r^2$ (**C**) $6\pi r^2$ (**D**) $8\pi r^2$ (**E**) $9\pi r^2$

24. Find the measure of $\angle 1$ if $m\angle 2 = (2x+3)^\circ$ and $m\angle 3 = (4x-1)^\circ$.



(**A**) 2° (**B**) 7° (**C**) $29.\overline{6}^\circ$ (**D**) $150.\overline{3}^\circ$ (**E**) 173°

25. If the circumference of a circle is 48.688 inches, what is the ratio of the circumference to its diameter? Round the answer to the nearest whole number.

(**A**) 2 (**B**) 3 (**C**) 4 (**D**) 5 (**E**) 6

GEOMETRY TEST 1 ANSWERS

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

1. $40 = \frac{1}{2} \cdot 8(4+b) \rightarrow b = 6$

2. $10x+10+8x-10=180 \rightarrow x=10 \rightarrow m\angle \mathrm{CBD} = 8x-10 = 70^\circ$

3. never

4. II and III

5. $200-40=160$

6. $16\pi = \pi d \rightarrow r = 8 \rightarrow A = 64\pi$

7. $2\mathrm{B}-1 = 2(25)-1 = 49$

8. $8-6=2$

9. An infinite number of planes can pass through a line and a given point on the line. Only one plane can pass through a line and a given point not on the line.

10. 1 point

11. $\mathrm{A}_{\text{pool}} - \mathrm{A}_{\text{rect}} = \pi r^2 - 12 = \pi \cdot 12^2 - 12 = 144\pi - 12$

12. $m\angle 1 + m\angle 2 + m\angle 3 = 180^\circ \rightarrow \frac{60^\circ}{x} + \frac{40^\circ}{x} + \frac{80^\circ}{x} = 180^\circ \rightarrow \frac{180^\circ}{x} = 180^\circ \rightarrow x = 1 \rightarrow \sqrt{4x^4} = \sqrt{4(1)^4} = \sqrt{4} = 2$

13. $\frac{4}{5}\left(\frac{250}{50}\right) = 4$

14. $2(6+12+2) = 40$

15. $l_5 \parallel l_1$

16. $m\angle \mathrm{C} = 180^\circ - (158+x)^\circ = (22-x)^\circ$ Therefore A.

17. $15d + 2c - 7 = 753 + 3d \rightarrow 12d + 2c = 760 \rightarrow 6d + c = 380$. Since $d + c = 180$, applying SPOE yields $5d = 200 \rightarrow d = 40$.

18. $\frac{1}{2} \cdot 20 \cdot 10 + \frac{1}{2} \cdot 20 \cdot 6 = 160$

19. all are true

20. $\frac{A}{r^2} = \pi$ which rounds to 3.

21. $2\ x+(180-x)\ -3\ x+(90-x)\ = 2 \cdot 180 - 3 \cdot 90 = 360 - 270 = 90^\circ$

22. $bw = \frac{1}{2}bh \rightarrow w = \frac{1}{2}h \rightarrow \frac{w}{h} = \frac{1}{2}$

23. $\mathrm{A}_{\text{after increase}} - \mathrm{A}_{\text{before increase}} = (3r)\left(\frac{1}{3}l\right)\pi + \pi(3r)^2 - \left(rl\pi + \pi r^2\right) = rl\pi + 9\pi r^2 - rl\pi - \pi r^2 = 8\pi r^2$

choice A = choice B

24. $2x+3 = 4x\text{-}1 \rightarrow x = 2 \rightarrow m\angle 2 = 2 \cdot 2 + 3 = 7^\circ \rightarrow m\angle 1 = 180^\circ - 7^\circ = 173^\circ$

25. $\frac{C}{d} = \pi$ which rounds to 3.