GEOMETRY TEST 3

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.

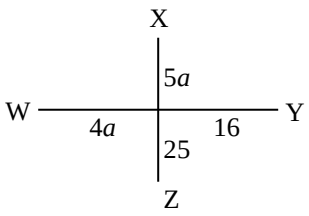
1. If WXYZ is a parallelogram, $m\angle \mathrm{X} = (4d)^\circ$, and $m\angle \mathrm{Z} = 60^\circ$, find the value of *d*.

(**A**) 12 (**B**) 15 (**C**) 30 (**D**) 56 (**E**) 240

2. Express the ratio 24:60 in simplest form.

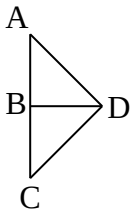
(**A**) 3:7 (**B**) 3:8 (**C**) 1:3 (**D**) 5:12 (**E**) 2:5

3. If $\overline{\mathrm{XZ}}$ bisects $\overline{\mathrm{WY}}$, find the value of *a*.



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

4. If $m\angle \mathrm{ADB} = m\angle \mathrm{CDB}$, what special name does $\overline{\mathrm{BD}}$ have?



(**A**) altitude (**B**) $\perp$ bisector (**C**) median (**D**) $\angle$ bisector (**E**) no names apply

5. If the lengths of the three edges of a cube add up to 1 yard, what is the perimeter of the base?

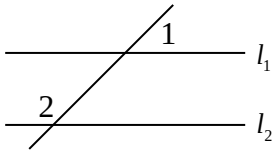
(**A**) 12 inches (**B**) 16 inches (**C**) 48 inches (**D**) 144 inches (**E**) 5 yards

6. Not every rhombus is a

I. square II. Parallelogram III. rectangle

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

7. If $l_1 \| l_2$, $m\angle 1 = (4x)^\circ$, and $m\angle 2 = (100)^\circ$, find *x*.



(**A**) 20 (**B**) 25 (**C**) 76 (**D**) 96 (**E**) 400

8. If PQRT is a parallelogram and $m\angle \mathrm{P} < m\angle \mathrm{Q}$, which of the following is the greatest?

(**A**) $m\angle \mathrm{P} + m\angle \mathrm{Q}$ (**B**) $m\angle \mathrm{T} + m\angle \mathrm{P}$ (**C**) $m\angle \mathrm{P} + m\angle \mathrm{R}$ (**D**) $m\angle \mathrm{T} + m\angle \mathrm{Q}$ (**E**) all have the same value

9. Find the measure of an angle that is 3 less than twice its supplement.

(**A**) 51° (**B**) 61° (**C**) 119° (**D**) 129° (**E**) 139°

10. The geometric mean between 96 and x is 4. Find the value of x.

(**A**) $\frac{1}{6}$ (**B**) 6 (**C**) 16 (**D**) 384 (**E**) 2,304

11. If $\frac{4}{9}$ of the area of a triangle is 36, what is $\frac{5}{27}$ of the area of the triangle?

(**A**) $\frac{80}{27}$ (**B**) 15 (**C**) 18 (**D**) 21 (**E**) 24

12. What type of triangle has sides of length 6, 8, and 11?

I. acute II. obtuse III. scalene

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

13. A line that contains a segment whose endpoints lie on a circle is called a _____.

(**A**) radius (**B**) diameter (**C**) chord (**D**) secant (**E**) tangent

14. The area of a rectangle is 48 square inches. If the width of the rectangle is 6 inches, find the perimeter.

(**A**) 14 inches (**B**) 28 inches (**C**) 36 inches (**D**) 48 inches (**E**) 96 inches

15. Which is always true for both a rhombus and a square?

I. Consecutive sides are $\perp$ II. All sides are $\cong$ III. The diagonals are $\cong$

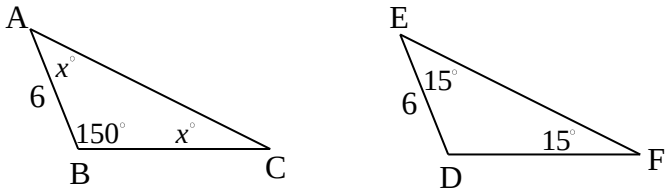
(**A**) II (**B**) I and II (**C**) II and III (**D**) I and III (**E**) I, II, III

16. If LMNO is a rectangle and diagonals $\overline{LN}$ and $\overline{MO}$ intersect at P, which of the following does not have to be true?

(**A**) $LP = PO$ (**B**) $m\angle LOM = m\angle MON$ (**C**) $MN = LO$

(**D**) $m\angle LMN = m\angle MLO$ (**E**) $\overline{MO}$ and $\overline{LN}$ bisect each other

17. Which of the following statements is not true?



(**A**) $\Delta ABC \cong \Delta EDF$ (**B**) $\Delta ABC \cong \Delta FDE$ (**C**) $\Delta BCA \cong \Delta FDE$ (**D**) $\Delta BAC \cong \Delta DEF$ (**E**) $\Delta CAB \cong \Delta FED$

18. The angles of a triangle are in the ratio of 2:3:4. Find the measure of the largest angle.

(**A**) 20° (**B**) 40° (**C**) 60° (**D**) 80° (**E**) 100°

19. Find the area of the following quadrilateral that has vertices $(-3,-2),(1,-2),(-2,2)$, and $(3,2)$.

(**A**) 16 (**B**) 18 (**C**) 20 (**D**) 22 (**E**) 27.5

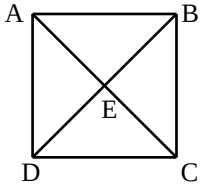
20. Given $V = \frac{4}{3}\pi r^3$, how many times larger will the volume become if the diameter of a sphere is doubled?

(**A**) 2 times (**B**) 4 times (**C**) 6 times (**D**) 8 times (**E**) 64 times

21. Two cities are *a* miles apart. How far apart are the two cities on a map if *b* inches equal *c* miles?

(**A**) $\frac{a}{bc}$ (**B**) $\frac{c}{ab}$ (**C**) $\frac{b}{ac}$ (**D**) $\frac{ac}{b}$ (**E**) $\frac{ab}{c}$

22. ABCD is a rectangle where AE = $x-3$ and BE = $2x-12$. Find the length of AC.

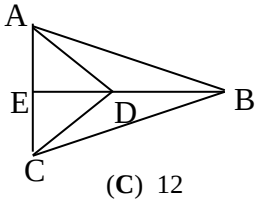


(**A**) 6 (**B**) 9 (**C**) 12 (**D**) 18 (**E**) 24

23. The angles of a trapezoid are in the ratio of 2:3:4:9. What is the difference between the measure of the largest angle and the smallest?

(**A**) 100° (**B**) 120° (**C**) 130° (**D**) 140° (**E**) 150°

24. If the area of quadrilateral ABCD is 30, ED = 2, and DB = 3, find the $m\overline{AC}$. Assume $\overline{AC} \perp \overline{EB}$.



(**A**) 5 (**B**) 10 (**C**) 12 (**D**) 15 (**E**) 20

25. If 0.7 is the midpoint of *x* and -6.6, find the value of *x*.

(**A**) -2.43 (**B**) 7 (**C**) 7.3 (**D**) 8 (**E**) 8.3

GEOMETRY TEST 3 ANSWERS

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

1. $4d = 60 \rightarrow d = 15$
2. 2:5
3. $4a = 16 \rightarrow a = 4$
4. angle bisector
5. Perimeter = 4(edge) = $4 \cdot 12$ = 48 inches
6. I and III
7. $4x + 100 = 180 \rightarrow x = 20$
8. A, B, equal 180°. C is the smallest due to having two acute angles. Since $\angle Q$ and $\angle T$ are obtuse, D is the greatest.
9. $x = 2(180 - x) - 3 \rightarrow 3x = 357 \rightarrow x = 119^\circ$
10. $\frac{96}{4} = \frac{4}{x} \rightarrow 96x = 16 \rightarrow x = \frac{1}{6}$
11. $\frac{9}{4} \cdot \frac{4}{9} A = 36 \cdot \frac{9}{4} \rightarrow A = 81 \rightarrow \frac{5}{27} \cdot 81 = 15$
12. Scalene. Since 6, 8, 10 is a right triangle, then 6, 8, 11 would be also obtuse.
13. secant
14. Perimeter = $2(8 + 6) = 28$
15. II
16. $m\angle LOM = m\angle MON$
17. $\Delta BCA \cong \Delta FDE$
18. $2x + 3x + 4x = 180 \rightarrow x = 20 \rightarrow 4x = 80$
19. $A = \frac{1}{2} h(b_1 + b_2) = \frac{1}{2} \cdot 4(5 + 4) = 18$
20. $V = \frac{4}{3}\pi(2r)^3 = 8\left(\frac{4}{3}\pi r^3\right)$
21. $\frac{ab}{c}$
22. A rectangle is a parallelogram and the diagonals of a parallelogram bisect each other . Therefore AE = EC and BE = ED. The diagonals of a rectangle are congruent. Therefore it can be proved that AE = BE.
$x - 3 = 2x - 12 \rightarrow x = 9 \rightarrow AC = 2(AE) = 2(9 - 3) = 12$
23. $2x + 3x + 4x + 9x = 360 \rightarrow 18x = 360 \rightarrow x = 20^\circ$. Largest - smallest = $9x - 2x = 7x = 7 \cdot 20 = 140^\circ$
24. $A_{\Delta ABC} - A_{ADC} = A_{ABCD} \rightarrow \frac{1}{2} b \cdot 5 - \frac{1}{2} b \cdot 2 = 30 \rightarrow b = 20$
25. $\frac{-6.6 + x}{2} = 0.7 \rightarrow -6.6 + x = 1.4 \rightarrow x = 8$