

41st Annual Dick Schaff Math Superbowl

Level 3 (Geometry) Huddle

Directions: Select the most correct answer for each question and mark it on your Scantron® sheet.
When appropriate, you may approximate π with 3.14.
N.O.T. stands for "None of These."

- A circle has circumference 6π m. What is the area of this circle?
A) 3π m B) 9π m C) 3π m² D) 9π m² E) N.O.T.
- Angle A and angle B are complementary. The measure of angle A is 37° . What is the measure of angle B?
A) 37° B) 53° C) 127° D) 143° E) N.O.T.
- If $P \rightarrow Q$ and $Q \rightarrow R$, which of the following MUST be true.
A) $\sim P \rightarrow \sim Q$ B) $\sim P \rightarrow \sim R$ C) $\sim Q \rightarrow \sim R$ D) $\sim R \rightarrow \sim P$ E) N.O.T.
- Let triangle ABC and triangle DEF be similar.
Let the length of $\overline{AB} = k$ and let the length of $\overline{DE} = 3k$.
Let the length of $\overline{BC} = P$. What is the length of \overline{EF} ?
A) P B) 3P C) 5P D) 7P E) N.O.T.
- Let triangle ABC and triangle DEF be similar.
Let the length of $\overline{AB} = k$ and let the length of $\overline{DE} = 3k$.
Let the area of ABC = Q. What is the area of DEF?
A) Q B) 3Q C) 5Q D) 7Q E) N.O.T.
- A rectangle has sides with length 3 feet and 9 feet. What is the perimeter of this rectangle?
A) 8 yards B) 24 yards C) 27 yards D) 81 yards E) N.O.T.
- A rectangle has sides with length 3 feet and 9 feet. What is the area of this rectangle?
A) 1 square yard B) 3 square yards C) 9 square yards D) 27 square yards E) N.O.T.

8. How many faces does an octahedron have?
- A) eight B) nine C) ten D) eleven E) N.O.T.
9. How many edges does an octahedron have?
- A) eight B) nine C) ten D) eleven E) N.O.T.
10. A rectangular solid has side lengths 2 m, 3 m, and 6 m. What is the length of a diagonal connecting opposite corners?
- A) 7 m B) 9 m C) 11 m D) 13 m E) N.O.T.
11. A closed can in the shape of a right circular cylinder has a radius of 10 inches and a height of 20 inches. What is the surface area of this can?
- A) 628 sq. in. B) 1,256 sq. in. C) 1,884 sq. in. D) 6,280 cu. in. E) N.O.T.
12. Which of the following is the negation of $(A \vee B)$?
- A) $A \wedge B$ B) $\sim A \vee \sim B$ C) $\sim A \wedge \sim B$ D) $\sim A \rightarrow B$ E) N.O.T.
13. To the nearest degree, what is the measure of an interior angle of a regular polygon with 2014 sides?
- A) 1° B) 2° C) 179° D) 180° E) N.O.T.
14. A sphere has volume 36π cubic inches. What is the radius of this sphere?
- A) 2 in. B) 3 in. C) 6 in. D) 9 in. E) N.O.T.
15. A sphere has volume 36π cubic inches. What is the surface area of this sphere?
- A) 16π sq. in B) 36π sq. in C) 108π sq. in D) 324π sq. in E) N.O.T.
16. A regular hexagon has side length k . What is the length of a diagonal connecting opposite corners?
- A) k B) $2k$ C) $3k$ D) $6k$ E) N.O.T.

17. A rhombus has side length 8 m. What is the area of this rhombus?
- A) 65 m^2 B) 66 m^2 C) 67 m^2 D) 68 m^2 E) N.O.T.
18. If you go to the planetarium, then you will stay late. Which is the inverse of this statement?
- A) If you don't go to the planetarium, then you won't stay late.
 B) If you stay late, then you will go to the planetarium.
 C) If you don't stay late, then you won't go to the planetarium.
 D) None of These
19. Which of the following is NOT a way to prove triangle congruence?
- A) angle-angle-angle B) angle-side-angle C) side-angle-side D) side-side-side E) N.O.T.
20. A right circular cone has height and base diameter of 6 inches. What is the volume of this cone?
- A) 54 cu. in. B) 55.8 cu in. C) 216 cu. in. D) 223.2 cu. in. E) N.O.T.
21. A square has side length 1 m. What is the area of this square?
- A) 1 mm^2 B) 10 mm^2 C) 100 mm^2 D) $1,000 \text{ mm}^2$ E) N.O.T.
22. A circular garden of radius R feet is surrounded by a walkway 2 feet wide. What is the area of the walkway?
- A) $4\pi \text{ sq. ft.}$ B) $4R\pi \text{ sq. ft.}$ C) $(4R - 4)\pi \text{ sq. ft.}$ D) $(4R + 4)\pi \text{ sq. ft.}$ E) N.O.T.
23. Which of the following is equivalent to $(A \vee B)$?
- A) $A \wedge B$ B) $\sim A \vee \sim B$ C) $\sim A \wedge \sim B$ D) $\sim A \rightarrow B$ E) N.O.T.
24. If you go to the planetarium, then you will stay late. Which is the contrapositive of this statement?
- A) If you don't go to the planetarium, then you won't stay late.
 B) If you stay late, then you will go to the planetarium.
 C) If you don't stay late, then you won't go to the planetarium.
 D) None of These

25. In a two-column geometric proof, which of the following could NOT be a reason to justify the claim $\overline{AB} \cong \overline{CD}$?
- A) Given
 - B) Corresponding Parts of Congruent Triangles are Congruent
 - C) Side-Side-Side Congruence
 - D) None of These
26. A parallelogram has an interior angle with a measure of k° . What is the measure of an adjacent interior angle?
- A) k° B) $(180 - k)^\circ$ C) $(180 - 2k)^\circ$ D) $(360 - 2k)^\circ$ E) N.O.T.
27. A square with side length 2 inches is cut from a circle with radius 2 inches. What is the area of the remaining shape?
- A) 6.56 sq. in. B) 8.56 sq. in. C) 10.56 sq. in. D) 12.56 sq. in. E) N.O.T.
28. If you have 2014 points, no three of which are collinear, how many different lines can you draw passing through exactly two of these points?
- A) 2013 B) 2014 C) 2,027,091 D) 2,029,105 E) N.O.T.
29. If triangle ABC is congruent to Triangle DEF, which of the following is not necessarily true?
- A) $\overline{AB} \cong \overline{DE}$ B) $\overline{AC} \cong \overline{DF}$ C) $\angle ABC \cong \angle DEF$ D) $\angle ACB \cong \angle DFE$ E) N.O.T.
30. If you go to the planetarium, then you will stay late. Which is the converse of this statement?
- A) If you don't go to the planetarium, then you won't stay late.
 - B) If you stay late, then you will go to the planetarium.
 - C) If you don't stay late, then you won't go to the planetarium.
 - D) None of These