

Triangles and Geometry (AND TRIG TOO!!! And probability...)

1. The number of radians in a 720-degree angle can be written as $a\pi$, where a is a constant. What is the value of a ?
2. The number of radians in a 540-degree angle can be written as $a\pi$, where a is a constant. What is the value of a ?
3. The number of radians in a 120-degree angle can be written as $a\pi$, where a is a constant. What is the value of a ? [Note: a is a fraction]
4. The number of radians in a 45-degree angle can be written as $a\pi$, where a is a constant. What is the value of a ? [Note: a is a fraction]

5. The surface area of a sphere is 324π square inches. What is the volume of the sphere, in cubic inches?
(The volume of a sphere with radius r is $\frac{4}{3}\pi r^3$. The surface area of a sphere with radius r is $4\pi r^2$.)
- (A) 81π
 - (B) 243π
 - (C) 432π
 - (D) 972π
 - (E) 1296π
6. The surface area of a sphere is 36π square inches. What is the volume of the sphere, in cubic inches?
(The volume of a sphere with radius r is $\frac{4}{3}\pi r^3$. The surface area of a sphere with radius r is $4\pi r^2$.)
- (A) 9π
 - (B) 18π
 - (C) 36π
 - (D) 72π
 - (E) 972π
7. If the ratio of r to t is 3 to 1 and the ratio of 3 to v is 10 to 1, what is $\frac{r}{v}$ in terms of t ?
- (A) $30t$
 - (B) $10t$
 - (C) $9t$
 - (D) $\frac{10}{t}$
 - (E) $\frac{30}{t}$

8. If the ratio of r to t is 5 to 1 and the ratio of 5 to q is 15 to 1, what is $\frac{r}{q}$ in terms of t ?
- (A) $75t$
 (B) $15t$
 (C) $10t$
 (D) $\frac{10}{t}$
 (E) $\frac{15}{t}$

9. If the ratio of r to t is 8 to 1 and the ratio of 4 to q is 13 to 1, what is $\frac{r}{q}$ in terms of t ?
- (A) $26t$
 (B) $13t$
 (C) $3.25t$
 (D) $\frac{13}{t}$
 (E) $\frac{26}{t}$

	Republican	Democrat	Independent
George	12	6	4
Martha	4	20	6
Fonzie	2	4	8

The table above gives the number of votes cast for each of 3 candidates organized by the political affiliation of the voter.

10. Based on the information in the table, what fraction of votes that were NOT cast for Fonzie were made by Democrats?
11. Based on the information in the table, what is the probability that a voter cast his or her vote for Martha, given that the voter is a Democrat?
12. Based on the information in the table, given that someone voted for George, what is the probability that that person is an independent?
13. If a voter is selected at random, what is the probability that that voter cast his or her vote for Fonzie, given that the voter is NOT an Independent?

Answers:

1. 4
2. 3
3. $\frac{2}{3}$
4. $\frac{1}{4}$
5. D
6. C
7. B
8. B
9. A
10. .5
11. $\frac{2}{3}$ or .666
12. $\frac{4}{22}$ or $\frac{2}{11}$
13. $\frac{6}{48}$ or $\frac{1}{8}$