GRE QUANT PRACTICE PAPER 1

1. Simplify: $\sqrt{576}$

Options:

a) $12\sqrt{3}$
b) 24
c) 34
d) $12\sqrt{6}$
e) $10\sqrt{12}$

2. Simplify $(\frac{16}{81})^{1/4}$

Options:

a) 2/3
b) 8/81
c) 4/81
d) 4/9
e) 2/81

3. Quantity A: The number of prime numbers between 0 and 100, inclusive.
Quantity B: The number of prime numbers between 101 and 200, inclusive.

Options:

a) The relationship cannot be determined from the information given
b) Quantity A is greater
c) The two quantities are equal.
d) Quantity B is greater.

4. Which number is greater than the sum of all the prime factors of 330?

Options:

a) 18
b) 8
c) 23
d) 20
e) 17

5. What is the sum of the individual factors of 100 and 200?
Options:

    a) 692
    b) 680
    c) 650
    d) 682
    e) 690

6. The sequence a1+a2+...+an begins with the numbers 3,11,18,... and has the nth term defined as a_1+2n+n^2, for n≥2.

What is the value of the 20th term of the sequence?

Options:

    a) 163
    b) 155
    c) 443
    d) 460
    e) 220

7. If a and b are integers such that −9≤a≤4 and −2<b<10, what is the smallest possible value of b−a?

Options:

    a) -5
    b) -11
    c) -4
    d) -10
    e) -6

8. What is the slope of the line 3x+2y=5?

Options:
    a) 3/2
    b) − 3/2
    c) 2
    d) 2/3

9. **Determine the greater quantity:**
BD+AC−BC

or

AD

A B C   D

Options:

    a) The relationship cannot be determined
    b) AD
    c) The quantities are equal
    d) BD + AC − BC

10. If the two lines represented by y=x+4 and y=3x−8 intersect at point x, what are the coordinates of point x?

Options:

    a) (6,8)
    b) (6, 10)
    c) (2,6)
    d) (4,8)
    e) (2,4)

11. Which of the following is an equation of a line that is perpendicular to 4x+2y=9?

Options:

    a) $y = \frac{1}{2}x + 4$
    b) $y = 2x − 4$
    c) $y = -2x + 9/2$
    d) $− 4x + 2y = 9$
    e) $y = -\frac{1}{2}x + 9$

12. What is the surface area of a cylinder that has a diameter of 6 inches and is 4 inches tall?

Options:

    a) 15π
    b) 42π
    c) 12π
    d) 10π
    e) 4π

13. How many times greater is the volume of a sphere with radius of 3 than the volume of a sphere with radius of √3 ?

Options:

    a) $3\sqrt{3}$

b) $9\sqrt{3}$
c) $\sqrt{3}$
d) 9
e) 3

14. Rusty is considering making a cylindrical grain silo to store his crops. He has an area that is 6 feet long, 6 feet wide and 12 feet tall to build a cylinder in. What is the maximum volume of grain that he can store in this cylinder?

Options:

a) 108 π
b) 108
c) 54 π
d) 432 π
e) 432

15. Which is greater: the circumference of a circle with an area of 25π in^2, or the perimeter of a square with side length 7 inches?

Options:

a) The perimeter of the square is greater.
b) The two quantities are equal.
c) The relationship cannot be determined from the information given.
d) The circumference of the circle is greater.

16. Quantity A: The degree measure of any angle in an equilateral triangle
Quantity B: The degree measure of any angle in a regular hexagon

Options:

a) The two quantities are equal
b) The relationship cannot be determined from the given information
c) Quantity A is greater
d) Quantity b is greater

17. Find the perimeter of an equilateral triangle with a height of 8.
Options:

a) $\frac{48}{\sqrt{3}}$
b) 24

c) None of the answer choices are correct

d) $\frac{24}{\sqrt{3}}$

e) 36

18. What is the area of an equilateral triangle with a base of 12?
Options:

a) $72\sqrt{3}$

b) $12\sqrt{3}$

c) $36\sqrt{3}$

d) $144\sqrt{3}$

e) $24\sqrt{3}$

19. A square with width of 6 m is inscribed in a circle. What is the total area inside the circle?
Options:
   a) 18π
   b) 49π
   c) 100π
   d) 81π
   e) 64π

20. A square table has an area of A square centimeters and a perimeter of P centimeters. If P=A/16, what is the perimeter of the square?
Options:
   a) 64 cm
   b) 256 cm
   c) 512 cm
   d) 128 cm
   e) 160 cm

21. Square PQRS is on the coordinate plane, and each side of the square is parallel to either the x-axis or y-axis. Point P has coordinates (−2,−1) and point R has the coordinates (3,4).

Quantity A: $5\sqrt{2}$
Quantity B: The distance between points P and R

Options:
   a) Quantity A is greater
   b) Quantity B is greater
   c) The relationship cannot be determined from the information given.
   d) The circumference of the circle is greater.

22. If the shortest side of a right triangle has length x–4 and its hypotenuse has length x+4, what is the length of the remaining side?
Options:

a) 4
b) $4x^2$
c) x
d) 2x
e) $4\sqrt{x}$

23. A given company has 1500 employees. Of those employees, 800 are computer science majors. 25% of those computer science majors are also mathematics majors. That group of computer science/math dual majors makes up one third of the total mathematics majors. How many employees have majors other than computer science and mathematics?
Options:

a) None of the other answers.
b) 250
c) 500
d) 300
e) 100

24. There are seven black marbles and nine white marbles in a bag. What is the approximate probability of drawing two black marbles and then a white marble without replacement?

Options:

a) 0.11
b) 0.13
c) 0.15
d) 0.2
e) 0.21

25. James has three normal six-sided dice. He rolls all three of the dice at the same time and records the three numbers that land face up. What is the probability that the dice did NOT land on three-of-a-kind?

Options:

a) 125/216
b) 1/216
c) 1/36
d) 35/36
e) 215/216

26. The average weight of the 7 cats at the veterinarian's office is 8 pounds. The average weight of the 12 dogs at the vet is 16 pounds.
Quantity A: The average weight of all of the animals
Quantity B: The average weight of the cats plus the average weight of the dogs

Options:

a) The relationship cannot be determined from the information given
b) The two quantities are equal
c) Quantity A is greater
d) Quantity B is greater

27. Compare 3^6 and 27^2.

Options:
a) $3^6 > 27^2$
b) $3^6 = 27^2$
c) $3^6 < 27^2$
d) The relationship cannot be determined from the information given.

28. If $\frac{1}{4}x - \frac{1}{6}y = \frac{1}{6}$ and $\frac{y}{z} = \frac{1}{2}$, then what is the value of $3x - z$?

Options:
a) 3
b) 4
c) 2
d) 1
e) 6

29. If 5(3x+y)=15, what is x in terms of y?

Options:
a) $x = 10 + \frac{y}{3}$
b) $x = \frac{10-y}{3}$
c) $x = \frac{5+5y}{3}$
d) $x = 1 - \frac{y}{3}$
e) $x = 3 - 3y$

30. A farmer has 44 feet of fence, and wants to fence in his sheep. He wants to build a rectangular pen with an area of 120 square feet. Which of the following is a possible dimension for the side opposite the barn?

Options:
a) 24 ft
b) 7 ft
c) 5 ft
d) 20 ft
e) 10 ft