

SAT Packet One

1. If $\frac{5x}{2} + 3 = 7$, then $10x + 12 =$
2. What number decreased by 7 equals the opposite of 5 times the number?
3. If $5d + 12 = 24$, then $5d - 12 =$
4. The product of x and y is 36. If both x and y are integers, then what is the least possible value of $x-y$?
5. The difference of two number is 4 and their sum is 14. What is their product?
6. If $3x^2 + 2x = 40$, then $15x^2 + 10x =$
7. If $2x - 2y = 5$ and $x + y = 6$, what is $x^2 - y^2$?
8. If x and y are positive numbers, such that $3x - 2y = 7$, what is the value of $\frac{2y+7}{6x}$?
9. A train travels at an average speed of 50 mph for the first 100 miles of a 200-mile trip and at an average speed of 75 mph for the final 100 miles. What is the train's average speed for the entire trip?
10. If $x^2 = y^2$, then which must be true?
 - a. $x = y$
 - b. $x = \frac{y^2}{x}$
 - c. $|x| = |y|$
 - d. $x^3 = y^3$
11. If points $(2,4)$, $(5,k)$, and $(8,20)$ are on the same line, what is the value of k ?
12. If $f(-1) = 1$ and $f(3) = 2$ and $f(x)$ is a linear function, what is $f(5)$?
13. What positive number is twice as far from 10 as from 1?
14. What is the only integer b for which $\frac{1}{b} > \frac{3}{11}$ and $3b \geq 7.5$?
15. The average of four numbers is 15. If one of the numbers is 18, what is the average of the remaining three numbers?
16. If $x^2 8^2 = 7^2 8^2 9^2$, then $x^2 =$
 - a. 49^2
 - b. 54^2
 - c. 63^2
 - d. 81^2

17. If $\frac{3a+b}{b} = \frac{7}{5}$, then what is $\frac{a}{b}$?

18. If $x-2y=10$ and $x \neq 0$, then what is the value of $\frac{2x}{y+5}$?

19. If the function $\{x\}$ is defined by the equation $\{x\}=(1-x)^2$, then what is the value of $\{\{4\}\}$?

20. If $\frac{a+b}{b} = 3$ and $\frac{a+c}{c} = 5$, what is $\frac{b}{c}$?

21. If $\frac{2}{3}$ of the seats at a stadium were filled at the beginning of the game, and at half-time 1000 spectators left, leaving $\frac{3}{7}$ of the seats filled, what is the total number of seats in the stadium? **Calculator allowed.**

22. Increasing 200 by 25% then decreasing it by 50% results in which of the following:

- a. 150 b. 125 c. 225 d. 250 **Calculator allowed.**

23. If $\frac{m^2-n^2}{2m-2n} = \frac{9}{2}$, then what is $m + n$?

24. If the equation $y = \frac{9x^2+12x+4}{6x+4}$ is graphed in the x-y plane, the graph is a line. What is the slope of the line?

25. If $y=x^2+4x+5$ and $z=x+2$, which expresses y in terms of z ?

- a. $y=z^2+1$ b. $y=z(z+3)$ c. $y=z^2+5$ d. $y=(z+2)^2+1$

26. Last year Julie's annual salary was \$20,000. This year's raise brings her annual salary to \$25,000. If she gets a raise of the same percentage every year, what will her salary be next year? **Calculator allowed.**

27. If $a\Delta b = \sqrt{a+b}$ for all non-negative numbers, then what is the value of $10\Delta 6$?

28. Jackie purchased a car in 2015. Three years later she sold it to a dealer for 40% less than she had paid for it in 2015. The dealer then added 20% onto the price he paid and resold it to another customer. The price the final customer paid for the car was what percent of the original price Jackie paid for the car in 2015? **Calculator allowed.**

- a. 40% b. 60% c. 72% d. 80%

29. If the ratio of quarters to dimes to 5 to 2 and the ratio of dimes to nickels is 3 to 4, what is the ratio of quarters to nickels?

30. A car traveled from A to B at an average rate of 40mph and then traveled back from B to A at 60mph. What was the car's average speed for the round trip?

Calculator allowed.

31. The tickets for a certain raffle are consecutively numbered. If Becky sold tickets numbered 75 to 148 inclusive, how many raffle tickets did she sell?

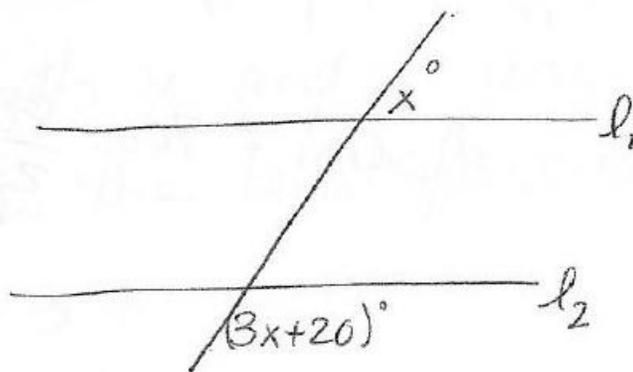
32. Two classes take the same exam. One class has 50 students while the other class has 30 students. The combined average of both classes is 84.5%. If the larger class averages 80%, what is the average of the smaller class? **Calculator allowed.**

33. The ratio of men to women in a certain room is 13:11. If there are 429 men in the room, how many women are there?

34. A number is increased by 30%, then decreased by 20%. What is the final result?

a. increased by 10% b. increased by 4% c. decreased by 5% d. decreased by 10%

35.



$l_1 \parallel l_2$ what is the value of x ?

A) 130

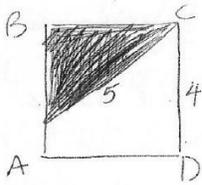
C) 80

E) 40

B) 100

D) 50

36.

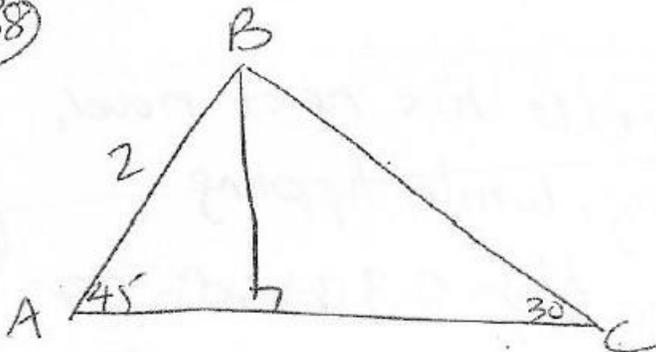


In square ABCD above, what is the area of the shaded region?

37. Taylor is preparing to write his next novel, which will be 700 pages long. While typing, Taylor types at a constant rate of 23 words per minute. If each page contains 800 words, which of the following functions p models the number of pages Taylor has left to type after typing m minutes?

- a. $p(m) = \frac{700 - 800m}{23}$ b. $p(m) = \frac{700 - 23m}{800}$ c. $p(m) = 700 - \frac{23m}{800}$ d. $p(m) = 700 - \frac{800}{23m}$

(38)



What is the length of BC ?

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

Answers: 1) 28, 2) $7/6$, 3) 0, 4) -35, 5) 45, 6) 200, 7) 15, 8) $1/2$, 9) 60, 10) c, 11) 12, 12) $10/4$, 13) 4, 14) 3, 15) 14, 16) c, 17) $2/15$, 18) 4, 19) 64, 20) 2, 21) 4200, 22) b, 23) 9, 24) $3/2$, 25) a, 26) \$31,250, 27) 4, 28) c, 29) 15:8 or $15/8$, 30) 48, 31) 74, 32) 92, 33) 363, 34) b, 35) e, 36) 6, 37) c, 38) c