

Algebra Word Problems I Topic Test - Theta Division
(for students who have NOT had more math than Algebra I, Algebra II, and Geometry)

CALCULATORS ALLOWED

1. Carrie can ride her bike 4 mph faster than she can run. She runs 6 mph. If she runs 6 miles and rides her bike the rest of the length of the track, it takes her 2 hours in total. How many miles is the length of the track?
A) 12 miles B) 16 miles C) 20 miles D) 24 miles E) None of these
2. The supplement of $\angle A$ is twice as big as the complement of $\angle B$. If the complement of $\angle A$ is 39° more than $\angle B$, what is the measure of $\angle B$?
A) 17° B) 34° C) 39° D) 56° E) 73°
3. The ratio of Amanda's age in years to Dave's age in years is 4:7. If Dave is 9 years older than Amanda, how many years old is Amanda?
A) 21 B) 16 C) 9 D) 8 E) None of these
4. In a right triangle, the ratio of one of the legs to the hypotenuse is 5:13. If the perimeter of the triangle is 150 cm, find the area of the triangle.
A) 1625 cm^2 B) 750 cm^2 C) 812.5 cm^2 D) 150 cm^2 E) 1500 cm^2
5. There are 3 bottles of nitric acid. One is 20% pure, one is 50% pure, and one is 75% pure. If Ted mixes 10 ml of the 20% soln, 24 ml of the 50% soln, and 20 ml of the 75% soln, what percentage pure soln does he have (to the nearest percent)?
A) 48% B) 49% C) 50% D) 53% E) 54%

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6. In $\triangle ABC$, the following is true. $\angle B$ is twice $\angle A$ and $\angle B$ is 5° more than $\angle C$. Find the positive difference between $\angle C$ and $\angle A$.
- A) 5° B) 32° C) 69° D) 37° E) 74°
7. Bob, Steve, and Brian decided to split their earnings at the pet store they owned in the following ratios -- Bob:Steve = 7:12, Steve:Brian = 3:7. If the total earnings were \$14,100, how much does Steve receive?
- A) \$1,458.62 B) \$5,834.48 C) \$3,600.00 D) \$2,100.00 E) \$8,400.00
8. A triangle and a rectangle have the same area. If the ratio of the base of the triangle to the width of the rectangle is 2:1, what is the ratio of the height of the triangle to the length of the rectangle?
- A) 4:1 B) 1:1 C) 2:1 D) 1:2 E) Can't be determined
9. A 10 oz bottle of ketchup normally costs \$1.75. A 20 oz bottle of the same ketchup costs \$3.00. If the 10 oz bottle goes on sale for 20% off, but the 20 oz bottle does not go on sale, which bottle gives you more for your money and by how much per ounce?
- A) 10 oz by 1¢/oz B) 20 oz by 1¢/oz C) 10 oz by 2.5¢/oz
D) 20 oz by 2.5¢/oz D) same value
10. Amy is twice as old as Brenda, and Amy is three years younger than Emily. The sum of their ages is 38 years. How old is Emily?
- A) 7 B) 10 C) 14 D) 17 E) 21

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11. Mr. and Mrs. Cash have \$200,000. They put part of it into a C.D. which earns 6% per year and they put the rest of it into a savings account which earns 5% per year. If they earned \$11,200 interest for the year, how much did they invest in the C.D.?
- A) \$100,000 B) \$150,000 C) \$50,000 D) \$120,000 E) \$80,000
12. Julie has exactly 24 coins in her purse consisting only of nickels, dimes, and quarters. If the total value of these coins is \$2.50 and if Julie has at least one coin of each type, how many different numbers of dimes is it possible for Julie to have in her purse?
- A) 5 B) 6 C) 8 D) 23 E) none of these
13. If Bill were $\frac{3}{5}$ as old as Mary will be in 3 years, then Bill would be 9 years younger than he is now. If Jane were $\frac{1}{2}$ as old as Bill will be in 2 years, then Jane would be 7 years younger than she is now. The sum of Bill's present age and Mary's present age exceeds Jane's present age by 39 years. Find the sum of the present yearly ages of Jane and Bill.
- A) 53 B) 58 C) 61 D) 62 E) none of these
14. When each side of a square is decreased by 2 cm, the area of the new square is 28 cm^2 less than the area of the original square. Find the area of the original square.
- A) 100 cm^2 B) 36 cm^2 C) 28 cm^2 D) $\sqrt{28} \text{ cm}^2$ E) None of these
15. Mike can paint a house in 15 days, while it takes Kim only 10 days to paint the same house. Mike works alone on the house for 5 days. Then, Mike and Kim work together until the job is completed. How many days did Kim work?
- A) 3 B) 4 C) 5 D) 8 E) 9

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16. Find three consecutive integers so that $\frac{1}{3}$ the first plus $\frac{1}{2}$ the second plus twice the third is the same as the sum of the three integers.
- A) 12, 13, 14 B) 3, 4, 5 C) 9, 10, 11 D) 21, 22, 23 E) None of these
17. If Jane scored 73, 85, and 94 on her first three tests, what must she score on her fourth test so she will have an average of 88?
- A) 100 B) 88 C) 85 D) 95 E) 84
18. A new TV is on sale for \$357. It is marked 15% off the original price. What is the amount of the discount?
- A) \$53.55 B) \$420.00 C) \$73.00 D) \$94.50 E) \$63.00
19. A rectangular garden has area 450 m^2 . Its length is twice its width. If there is a walkway, 1 meter wide, surrounding the garden, find the total area of the walkway and the garden together.
- A) 496 m^2 B) 364 m^2 C) 406 m^2 D) 544 m^2 E) 512 m^2
20. In a rectangular pool, if Bill swims along the diagonal, he swims 25 m. The width of the pool is 15 meters. Find the area of the pool.
- A) 500 m^2 B) 70 m^2 C) 375 m^2 D) 300 m^2 E) None of these