



7. A survey of 50 high school students revealed the following data:

- 29 A's were given in Math
- 26 A's were given in English
- 20 A's were given in Science
- 8 made A's in only Math and Science
- 8 made A's only in Math and English
- 3 made A's in only Science and English

How many students made A's in all three subjects?

- a) 3                      b) 6                      c) 10                      d) 12                      e) N.O.T.

8. Joan's average through five math tests was  $m$ . After a sixth test her average was  $n$ . If the teacher later re-calculates the grades, doubling the weight of the sixth test, what will Joan's average be?

- a)  $7(n-m)$               b)  $\frac{2}{7}n + \frac{5}{7}m$               c)  $\frac{12}{7}n - \frac{5}{7}m$               d) not enough information              e) N.O.T.

9. If  $y$  varies jointly as  $x$  and inversely as  $z$  and  $y$  is  $a$  when  $x$  is  $b$  and  $z$  is  $c$ , find  $x$  if  $y$  is  $b$  and  $z$  is  $a$ .

- a)  $c$                       b)  $\frac{ab}{c}$                       c)  $\frac{ac}{b}$                       d)  $\frac{b^2}{c}$                       e) N.O.T.

10. Barry purchased a circular tract of land 100 ft. in diameter on which he wanted to build a rectangular house. County ordinances prohibit the construction of a dwelling within 10 ft. of one's property line. Find the maximum area (in sq. ft.) of Barry's house.

- a) 3200                      b) 4050                      c) 5575                      d) 6400                      e) N.O.T.

11. One year ago Monica was 3 times as old as her nephew. In 9 years she will be twice as old as he is. Find the sum of their current ages.

- a) 26                      b) 40                      c) 42                      d) 60                      e) N.O.T.

12. A boater found that he could travel 25 miles downstream in half the time required to travel 22 miles upstream. Find the ratio of the rate of the current to the boat's rate in still water.

- a) 19:69                      b) 7:18                      c) 2:5                      d) 4:9                      e) N.O.T.

13. In a 5 mile race Jim can beat Arnold by .4 miles and Arnold can beat Alex by .6 miles. By how many miles can Jim beat Alex?

- a) .8                      b) .952                      c) 1                      d) 1.28                      e) N.O.T.

14. A bag contains 99 white marbles and 1 red marble. 100 people draw marbles with one million dollars going to the person drawing the red marble. The person whose chances of winning exceed those of everyone else is among the:

- a) first 25 to draw
- b) second 25 to draw
- c) third 25 to draw
- d) final 25 to draw
- e) N.O.T.

15. An 8"X 8"X 8" box is tightly packed with 16 8" high cylinders. How many cubic inches are not filled?

- a)  $16(4-\pi)$       b)  $64(\pi-1)$       c)  $128(4-\pi)$       d)  $512(\pi-1)$       e) N.O.T.

16. There are 7 rungs on Mr. Barber's ladder. If there were two more rungs they would have to be 3 inches closer together. How many feet tall is the ladder?

- a)  $7\frac{7}{8}$       b)  $8\frac{3}{4}$       c) 10      d)  $12\frac{1}{2}$       e) N.O.T.

17. A man is 5 miles south and 8 miles east of his home. He is also 5 miles north of a river which flows eastward. Traveling the shortest route possible he fetches some water and returns home in 3 hours. Find his speed in mph.

- a)  $6\frac{1}{3}$       b)  $\frac{2\sqrt{41} + 5}{3}$       c)  $5\frac{2}{3}$       d)  $\frac{2\sqrt{29} + \sqrt{41}}{3}$       e) N.O.T.

18. Two drivers leave a certain point and drive in opposite directions. One driver travels 5 mph faster than the other and 5 hours 12 minutes later they are 494 miles apart. Find the speed, in mph, of the slower driver.

- a) 45      b) 47      c) 50      d) 52      e) N.O.T.

19. For three consecutive odd, positive integers it is found that twice the product of the first two exceeds the square of the third by 61. Find the sum of these integers.

- a) 27      b) 35      c) 41      d) 45      e) N.O.T.

20. A ship traveled 10 miles on a course of  $30^\circ$ . The ship then changed its course to one of  $330^\circ$  and traveled 10 more miles. How many miles was the ship from its starting point?

- a)  $5\sqrt{3}$       b) 10      c)  $10\sqrt{2}$       d)  $10\sqrt{3}$       e) N.O.T.

21. How many pounds of candy worth \$.55 per pound must be mixed with candy worth \$.48 per pound to create a 10 pound box which costs \$5.00?

- a)  $2\frac{6}{7}$       b)  $3\frac{2}{7}$       c)  $6\frac{5}{7}$       d)  $7\frac{1}{7}$       e) N.O.T.

22. The measure of angle A exceeds that of its complement by  $36^\circ$ . Find the measure of the supplement of angle A.

- a)  $112^\circ$       b)  $117^\circ$       c)  $127^\circ$       d)  $153^\circ$       e) N.O.T.

23. A commuter airline which serves 200 passengers per day commissioned an agency to study the effects of a price increase. It was determined that for every \$10 raise in the existing fare of \$80 5 passengers would take their business elsewhere. The airline's current daily income is \$16,000; what is the projected maximum income?

- a) \$16,000      b) \$19,600      c) \$24,000      d) \$28,800      e) N.O.T.

24. Wendy's piggy bank contained 48 coins, all quarters or dimes. The number of quarters was 9 less than twice the number of dimes. How much money did Wendy have?

- a) \$7.65      b) \$9.15      c) \$10.05      d) \$11.65      e) N.O.T.

25. An observer in a plane flying at 2000 ft. noted two houses on a plain. The angle of depression to one house was  $30^\circ$  and to the other  $60^\circ$ . How many feet apart were the houses?

- a)  $\frac{2000\sqrt{3}}{3}$       b)  $\frac{4000\sqrt{3}}{3}$       c)  $2000\sqrt{3}$       d)  $4000\sqrt{3}$       e) N.O.T.

26. A motorist traveled from Tampa to Miami at a constant speed of 50 mph. What speed (in mph) must he maintain on the return trip in order to make the round trip at an average speed of 55 mph?

- a)  $61\frac{1}{9}$       b)  $60\frac{1}{9}$       c) 60      d)  $59\frac{1}{3}$       e) N.O.T.

27. In 3 hours a boat can travel 24 downstream or 10 miles upstream. Find the rate (in mph) of the current.

- a)  $2\frac{1}{3}$       b)  $2\frac{5}{6}$       c)  $5\frac{2}{3}$       d) 7      e) N.O.T.

28. Herman saw a lightning flash and 2.25 seconds later heard the crack of thunder. Joey heard the thunder 3.75 seconds after seeing the lightning. If Herman was  $x$  meters from the lightning, how many meters away was Joey?

- a)  $9x$       b)  $2x$       c)  $\frac{8}{5}x$       d)  $\frac{5}{3}x$       e) N.O.T.

29. At  $2:10\frac{10}{11}$  the hands of a clock are together. When are they next together?

- a)  $3:15\frac{4}{11}$       b)  $3:15\frac{9}{11}$       c)  $3:16\frac{4}{11}$       d)  $3:16\frac{9}{11}$       e) N.O.T.

30. Andrea and Betty ran in opposite directions from points exactly opposite each other on a circular track. They met first 60 yards from Andrea's starting point and met again when Andrea was 100 yards short of completing her first lap. How many yards long is the track?

- a) 140      b) 220      c) 280      d) 440      e) N.O.T.