1. The day you were born, your grandmother put $500 in a savings account that earns 10% compounded annually. (On your first birthday the balance would be $550; on your second birthday it would be $605, etc.) She said that you could withdraw money from the account on your birthday IF the balance was at least $1000. What age will you be the first time you would be able to withdraw money from the account?

    a. 6 years old
    b. 7 years old
    c. 8 years old
    d. 9 years old
    e. 10 years old

2. Below is a dart board. When you throw a dart, you earn either 5 points, 7 points, or 0 points (if you miss). Your score is the sum of all the points you earn. What is the highest total score less than 100 that is *impossible* to make?
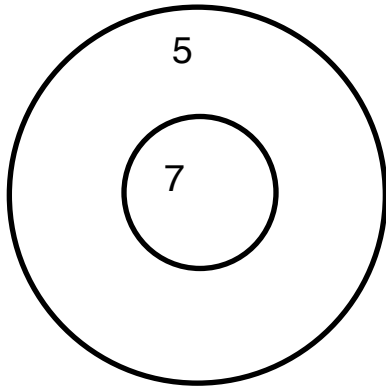

    a. 11 points
    b. 13 points
    c. 18 points
    d. 23 points
    e. 34 points

3. The state of Taxus, where everyone makes less than $100,000, passed a law for a new income tax--the more you make, the more tax you pay. The percent for the tax rate is the number of thousands of dollars of income. For instance, someone earning $15,000 paid 15% in taxes. So that person paid $2,250 in tax and got to keep $12,750. Someone earning $20,000 would pay 20% and so on. In Taxus, what salary (to the nearest $1000) should you make so that you have the greatest number of dollars after paying tax?

    a. $1,000
    b. $20,000
    c. $50,000
    d. $60,000
    e. $80,000

4. In eighth grade, the ratio of boys to girls was 5:4. After 3 more girls enrolled in the eighth grade, the ratio was 10:9. How many students are in the eighth grade now?

    a. 57 students
    b. 54 students
    c. 109 students
    d. 93 students
    e. 22 students

5. Triangular numbers are associated with triangular arrays. The first three triangular numbers (illustrated below) are 1, 3, and 6. What is the 30th triangular number?
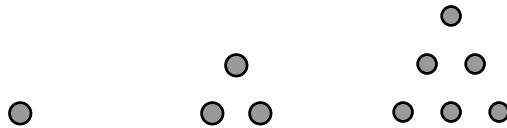
    a. 300
    b. 360
    c. 419
    d. 465
    e. 499

6. Ann, Bob, and Dee had 8 one-dollar bills to divide among themselves. They did not have to get the same amount; however, everyone should get at least one dollar. How many different ways are there for Ann, Bob, and Dee to distribute all eight one-dollar bills?

    a. 16 ways
    b. 18 ways
    c. 21 ways
    d. 24 ways
    e. 28 ways

7. How many different squares can be drawn on the square array shown below? Squares may overlap. The vertices of the squares must be on the dots.
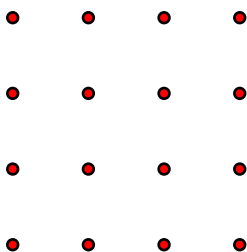
    a. 9 different squares
    b. 13 different squares
    c. 14 different squares
    d. 18 different squares
    e. 20 different squares

8. The table below shows input and output from a linear function. What is the value of x?

Input	3	7	9	14	19
Output	16	28	34	x	64

   a. 37
   b. 71
   c. 46
   d. 49
   e. 44

9. The seventh-graders have three clubs: math club, chess club, and garden club. Four students are in all three clubs. Eight students are in Garden and Chess Clubs, but not Math Club. Twelve students are in Math and Chess Clubs, but not Garden Club. Six students are in Math and Garden Clubs, but not Chess Club. The Garden Club has 27 members. The Chess Club has 34 members. The Math Club has 35 members. How many seventh graders are in at least one club?

   a. There are 62 seventh-graders in at least one club.
   b. There are 96 seventh-graders in at least one club.
   c. There are 82 seventh-graders in at least one club.
   d. There are 73 seventh-graders in at least one club.
   e. There are 52 seventh-graders in at least one club.

10. The mean of a thirteen-item data set is 320. Eleven of the items are 300, 320, 199, 175, 325, 520, 156, 225, 326, 421, and 504. The median of the data set is 325. What is the largest possible missing value from this data set?

   a. 365
   b. 364
   c. 363
   d. 362
   e. 361

11. On the Middle School Mathematics Contest last year a student scored 120 points. The scoring formula is 4 times the number right minus the number wrong plus 30. If there are 30 questions on the test, what is the **greatest** number of questions they could have omitted?

   a. 0
   b. 2
   c. 3
   d. 4
   e. 5

12. How many circular pipes with an inside diameter of 2 centimeters would it take to carry the same amount of water as a circular pipe with an inside diameter of 2 decimeters?

    a. 10 pipes
    b. 100 pipes
    c. 800 pipes
    d. 1000 pipes
    e. 8000 pipes

13. If $a + b = 19$ and $a - b = 5$, what is the value of $3a - 4b$

    a. -7
    b. 7
    c. -8
    d. 8
    e. 12

14. Pictured below are two frames made from tiles that are right triangles. The frame that surrounds a 4 unit by 4 unit square has 36 triangular tiles. The frame that surrounds a 5 unit by 5 unit square has 44 triangular tiles. How many triangular tiles would it take to surround a 20 unit by 20 unit square?
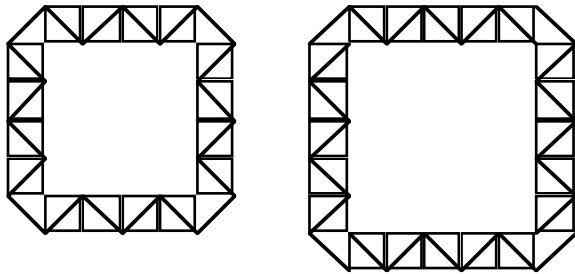

    a. 180 tiles
    b. 176 tiles
    c. 164 tiles
    d. 84 tiles
    e. 88 tiles

15. Ham sandwiches cost $3.50 each. Peanut butter sandwiches cost $2.50 each. Lee just spent exactly $37 on sandwiches. What is the GREATEST total number of sandwiches that Lee could have bought?

    a. 12 sandwiches
    b. 13 sandwiches
    c. 14 sandwiches
    d. 15 sandwiches
    e. 16 sandwiches

16. To make a twelve-inch diameter pizza you need $2\frac{2}{3}$ cups of shredded cheese. You have 2 cups of shredded cheese. What diameter pizza (round to the nearest inch) could you make with 2 cups of cheese that would be as "cheesy" as the 12-inch pizza with $2\frac{2}{3}$ cups of shredded cheese?

    a. 18 inches
    b. 10 inches
    c. 9 inches
    d. 6 inches
    e. 5 inches

17. The area of a square tile is 0.25 square feet. Jo used exactly 572 square tiles to cover the kitchen floor. The kitchen floor is rectangular. What is the perimeter of the kitchen floor?

    a. 143 feet
    b. 52 feet
    c. 44 feet
    d. 70 feet
    e. 48 feet

18. How many fractions with a whole number numerator and a denominator of 31 have values between 0.12 and 0.95?

    a. 26
    b. 25
    c. 30
    d. 27
    e. 28

19. The altitude of Triangle A is increased by 20% and its base is decreased by 20%. The new triangle is called Triangle B. What is the ratio of the area of Triangle A to the area of Triangle B?

    a. 25:24
    b. 24:25
    c. 2:3
    d. 3:2
    e. 1:1

20. Ann has a rectangular patio that is 6 meters wide and 4 meters long. She dug a trench 1 meter wide and 2 decimeters deep and all the way around the patio except for a 1-meter wide stepping stone. How much dirt does Ann need to fill the trench?

trench

Patio
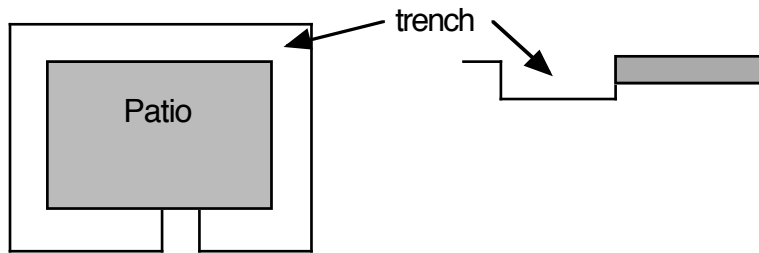
    a. 4.6 cubic meters
    b. 46 cubic meters
    c. 9.6 cubic meters
    d. 96 cubic meters
    e. 9.5 cubic meters

21. Let n be an integer between 1 and 10, inclusive. For how many values of n is $\dfrac{n!}{n+1}$ an integer?

    a. 5
    b. 4
    c. 3
    d. 2
    e. 1

22. Abe, Ben, and Clay are married to Kay, May, and Nan, but not necessarily in that order. Four of the six people play mixed-doubles tennis. (In mixed doubles, a team consists of a man and a woman.) Ben never plays tennis. No husband and wife play on the same team. May's husband and Abe's wife are partners. Nan's husband and Kay are partners. Which statement is true?

    a. Nan is married to Abe.
    b. Kay does not play tennis.
    c. Kay is married to Clay.
    d. Nan does not play tennis.
    e. May is married to Ben.

23. A leaky faucet drips at the rate of 1 drip every 3 seconds. One hundred eighty drips will fill one cup. How many gallons of water will drip in one <u>week</u>?

    a. 7 gallons
    b. 1 gallon
   c. 16 gallons
    d. 70 gallons
    e. 112 gallons

24. A right rectangular prism has dimensions that are whole numbers of centimeters. It has 2 sides that each have an area of 323 square centimeters. It has two sides that each have an area of 357 square centimeters. It has 2 sides that each have an area of 399 square centimeters. What is the volume of the prism?

    a. 46,009,089 cubic centimeters
    b. 1079 cubic centimeters
    c. 2158 cubic centimeters
    d. 6474 cubic centimeters
    e. 6783 cubic centimeters

25. What is the mean of all the numbers between 1 and 100 that are evenly divisible by 6?

    a. 51
    b. 96
    c. 102
    d. 60
    e. 1632

26. The students in Ms. Jones' class responded to a survey that asked about their pets. The graph below was created from the survey data. According to the graph, which statement is false?
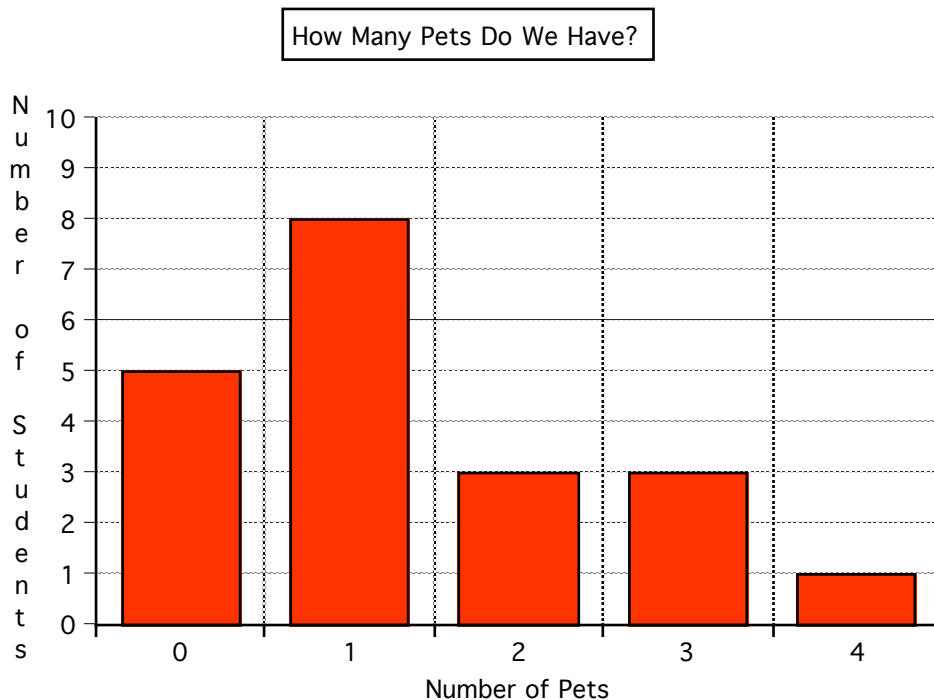

    a. Twenty students responded to the survey.
    b. The median number of pets is 1.
    c. The mean number of pets is 1.35.
    d. The mode of the number of pets is 1.
    e. The students who responded to the survey have a total of 10 pets.

27. For how many days during the year is the number of the DAY a factor of the number of the MONTH?

    a. 35 days
    b. 22 days
    c. 244 days
    d. 306 days
    e. 341 days

28. The set of seven tangrams forms a square as shown below. Every triangle in the tangram set is a right isosceles triangle. If the square tangram piece shaded below has an area of 1 square inch, what is the perimeter of the large square formed by all seven pieces? (Round to the nearest inch.)
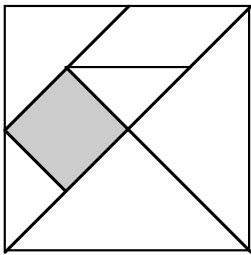
    a. 8 inches
    b. 16 inches
    c. 32 inches
    d. 11 inches
    e. 24 inches

29. The Seat Factory makes one kind of seat and one kind of leg. They put three legs on a seat to make a stool. They put 4 legs on a seat to make a chair. On Friday morning, they had some legs and some seats. If they made as many chairs as possible from the leftovers, they would use all the legs and have one seat left over. If they made as many stools as possible, they would use all the seats and have 4 legs left over. How seats are there?

    a. 8 seats
    b. 9 seats
    c. 10 seats
    d. 11 seats
    e. 12 seats

30. Ty walks 75% of the way home in 16 minutes. In how many minutes can Ty walk the rest of the way home at the same rate? (Round to the nearest second.)

    a. 4 minutes and 0 seconds
    b. 12 minutes
    c. 5 minutes and 20 seconds
    d. 5 minutes and 33 seconds
    e. 21 minutes and 33 seconds