

1. A parking lot holds 64 cars. The parking lot is $\frac{7}{8}$ filled. How many spaces remain in the lot?
 - a. 6
 - b. 8
 - c. 16
 - d. 48
 - e. 56

2. How many different prime factors does 12 have?
 - a. 5
 - b. 4
 - c. 3
 - d. 2
 - e. 1

3. Evaluate $\frac{1+3.5}{3.7+9.8}$. Round to nearest hundredth.
 - a. 11.75
 - b. 1.26
 - c. 11.02
 - d. .33
 - e. .63

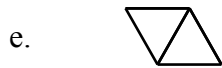
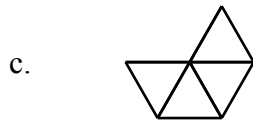
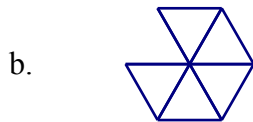
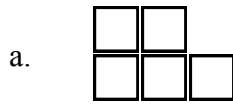
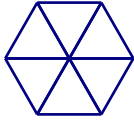
4. Calculate $2 + 3 \div 5 + 2 \cdot 4 \div 5$.
 - a. $4\frac{1}{5}$
 - b. $4\frac{2}{5}$
 - c. $1\frac{4}{5}$
 - d. $1\frac{33}{35}$
 - e. $2\frac{2}{5}$

5. If 10 workers assemble 30 television sets in 8 hours, how many television sets will 40 workers assemble in 4 hours, assuming that they all work at the same rate?
 - a. 15
 - b. 32
 - c. 45
 - d. 60
 - e. 80

6. The ratio of boys to girls in a class is 8:7. If the class has 60 students, how many are girls?
- 28
 - 30
 - 32
 - 36
 - 52
7. What is the least possible positive number divisible by 9 different prime numbers?
- 111,546,435
 - 203,693,490
 - 223,092,870
 - 3,011,753,745
 - 3,234,846,615
8. When Sam counts the pennies in her bank by 5's she has 3 left over and when she counts by 7's, she has 4 left over. What is the least possible prime number of pennies in the bank?
- 18
 - 23
 - 29
 - 43
 - 53
9. Two bicyclists met at the intersection of two straight flat roads. They left at the same time. One headed north at 27 kilometers per hour. The other headed east. Twenty minutes later, they were 15 kilometers apart. How fast was the second bicyclist going?
- 12 kph
 - 36 kph
 - 39 kph
 - 50 kph
 - 144 kph
10. Over the course of a year, a cat gained from 10 pounds to 18 pounds. What is the percent increase in the cat's weight?
- 80%
 - 120%
 - 44%
 - 180%
 - 60%

11. A vacuum cleaner picks up 80% of the dirt each time it goes over a rug. If Ben runs the vacuum cleaner over the rug twice, what percent of the dirt remains?
- 0.4%
 - 4%
 - 10%
 - 40%
 - 64%
12. If x represents a non-zero integer, which statement is not always true?
- $-|-x| \leq x$
 - $\frac{1}{x} \leq 1$
 - $x^2 \geq 1$
 - $-x$ is negative
 - x is a rational number.
13. What is the digit in the 10th position in the decimal representation of $1/13$?
- 0
 - 7
 - 9
 - 2
 - 3
14. The ratio of boys to girls in two different math contest leagues is 3:4 and 4:5. If the two leagues have the same number of students, which of the following must be true?
- There is exactly one more boy in one of the leagues than the other league.
 - The ratio of the number of boys in one league to the number of boys in the other league is 27:28.
 - The ratio of the number of boys in one league to the number of boys in the other league is 15:16.
 - The ratio of the number of boys in one league to the number of boys in the other league is 35:36
 - There are more boys than girls in each league.
15. Calculate $0.222222222222 \times 0.5$
- 0.111111111111
 - 0.111111111111
 - 0.011111111111
 - 1.111111111111
 - 0.111111111110

16. If the hexagon shown here represents $\frac{3}{2}$, which of the figures would represent $\frac{5}{4}$?



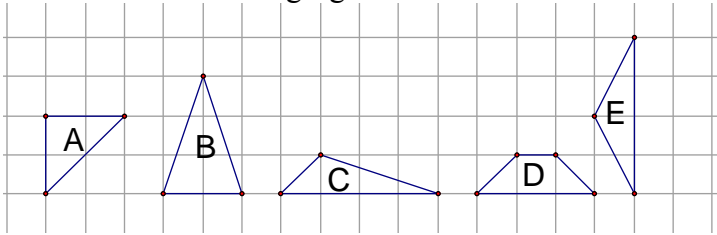
17. Twelve \$5-bills, eight \$10-bills, and five \$20-bills are put into a bag and shaken up. You get to reach in and pull out two of the bills without looking. What is the probability you get a total of at least \$20?

- a. 46%
 b. 54%
 c. $66\frac{2}{3}\%$
 d. $33\frac{1}{3}\%$
 e. 60%

18. Calculate $4^{150} \div 2^{150}$.

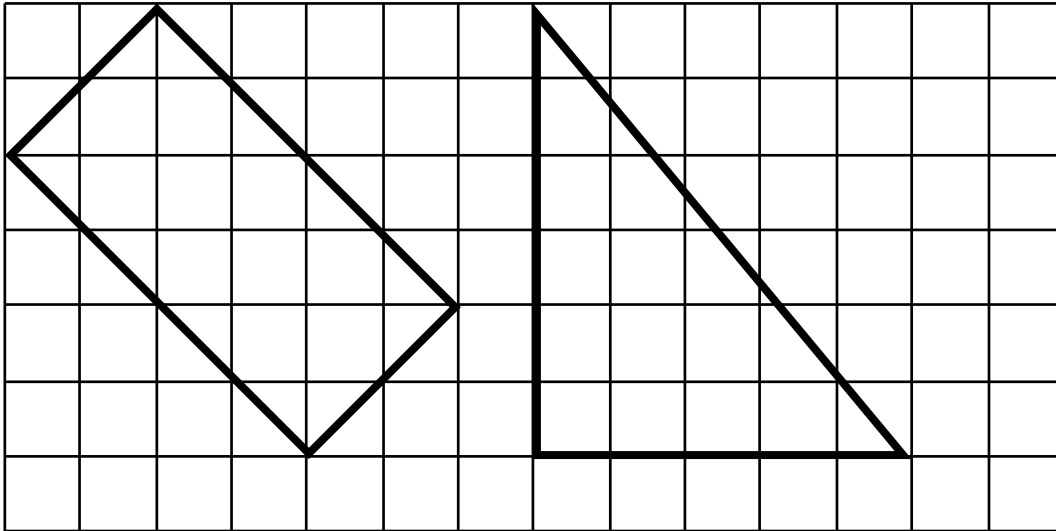
- a. 2
 b. 2^{75}
 c. 4^{75}
 d. 3^{150}
 e. 2^{150}

19. Which of the following figures shows an obtuse isosceles triangle?



- Figure A
- Figure B
- Figure C
- Figure D
- Figure E

20. On the grid shown below, the length of one side of a small square is one centimeter. Which statement is true?



- The area of the triangle is 30 square centimeters.
- The area of the rectangle is 8 square centimeters.
- The area of the triangle is less than the area of the rectangle.
- The area of the triangle is greater than the area of the rectangle.
- The area of the rectangle is an irrational number.

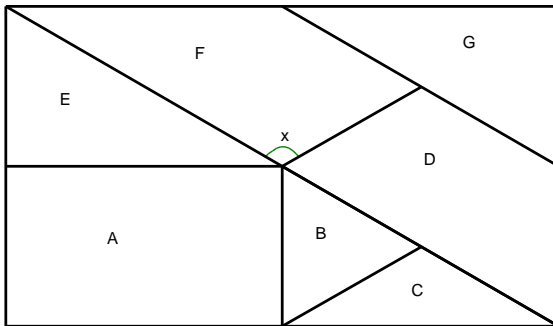
21. Which statement is not always true?

- Adjacent angles in a parallelogram are supplementary.
- The acute angles in a right triangle are complementary.
- Vertical angles are congruent.
- The angles in a linear pair are supplementary.
- The two acute angles formed by the diagonal at the vertex of a rhombus are complementary.

22. A geometric solid is placed on an overhead projector. The solid is resting on one of its faces. Its shadow is shown below. Which of the following solids could be casting the shadow shown?



- A cube
 - A sphere
 - A tetrahedron
 - A pyramid
 - A cone
23. The figure shown below is a rectangle that is made of various other polygons. Polygon A is a rectangle. Polygon B is an equilateral triangle. Polygon C is an isosceles triangle. Polygon D is an isosceles trapezoid. Polygon F is a trapezoid whose bases are collinear with those of Polygon D. What is the measure of angle X?



- 150°
 - 135°
 - 120°
 - 115°
 - 110°
24. The first 15 Fibonacci numbers are shown in the second row of the table below and their positions are given in first row. You might notice that the 5th, 10th, and 15th Fibonacci numbers are multiples of 5. In what position will the first Fibonacci number that is a multiple of 20 occur?

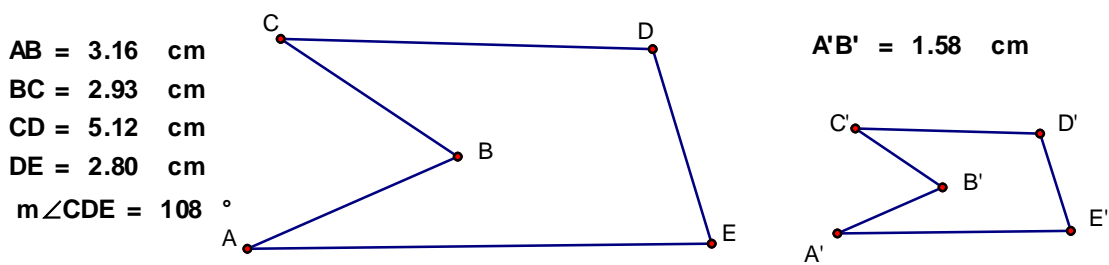
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1	2	3	5	8	13	21	34	55	89	144	233	377	610

- 15
- 20
- 25
- 30
- 35

25. The sixth grade has two clubs: the math club and the book club. There are 39 students who are in at least one of the clubs. Eight of those students are in both clubs. The math club has 25 members. How many members does the book club have?

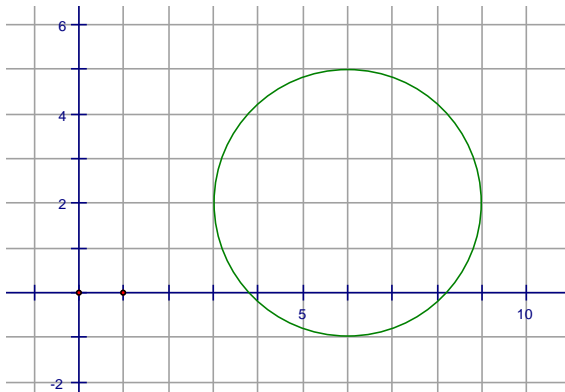
- 14
- 16
- 18
- 20
- 22

26. The two figures shown here are similar. What is the length of $\overline{C'D'}$ and the measure of $\angle C'D'E'$?



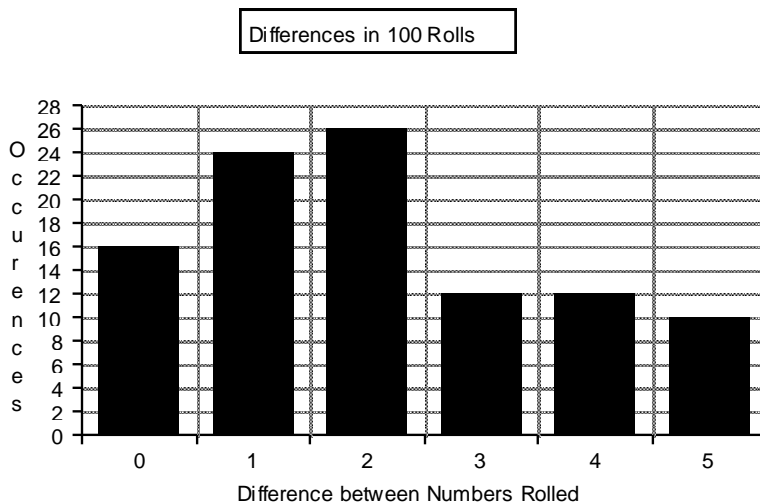
- $C'D' = 1.58$ cm and $m\angle C'D'E' = 54^\circ$
- $C'D' = 2.06$ cm and $m\angle C'D'E' = 54^\circ$
- $C'D' = 2.56$ cm and $m\angle C'D'E' = 54^\circ$
- $C'D' = 2.56$ cm and $m\angle C'D'E' = 108^\circ$
- $C'D' = 1.4$ cm and $m\angle C'D'E' = 108^\circ$

27. What are the coordinates of the center of the circle shown below?



- (2, 5)
- (5, 2)
- (6, -1)
- (2, 6)
- (6, 2)

28. In a drawer there are 53 socks that are identical except for color. Twenty six are red and 27 are blue. We will call two socks that are the same color a matched pair. When it is dark, you reach in and pull out five socks. What is the probability, to the nearest hundredth, that you have pulled out two matched pairs of socks?
- The probability is .02
 - The probability is .25.
 - The probability is .49.
 - The probability is .96.
 - The probability is 1.00.
29. Function Machine A takes a number and squares it and then adds one to the result. (For instance, if 3 is put into Machine A, 10 will be the output.) Function Machine B takes a number divides it by 2 and then adds 5 to the result. (For instance, if 3 is put into Machine B, 6.5 will be the output.) A number is put into Machine A; the output from A is put into Machine B; 77.5 is the output from Machine B. What was the original number that was put into Machine A?
- 12
 - 56
 - 1915.0652
 - 3008.625
 - 27,556
30. The graph shown below shows the results from rolling a pair of dice 100 times. The difference between the numbers rolled was recorded. (For example, if a 4 and 5 were rolled, the difference recorded was 1.) Which statement is true for these data?



- The mode is 2, the median is 2, and the mean is 3.
- The mode is 2, the median is 2, and the mean is 2.5.
- The mode is 2, the median is 2.5, and the mean is 3.
- The mode is 2, the median is 2, and the mean is 2.1.
- The mode is 2, the median is 2, and the mean is 15.