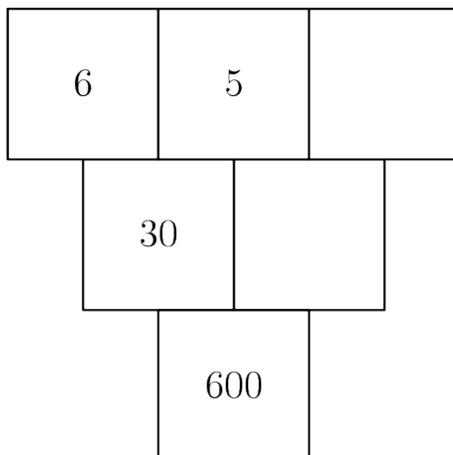


1. Danica wants to arrange her model cars in rows with exactly 6 cars in each row. She now has 23 model cars. What is the smallest number of additional cars she must buy in order to be able to arrange all her cars this way?
2. A sign at the fish market says, 50% off, today only: half-pound packages for just \$3 per package. What is the regular price for a full pound of fish, in dollars? (Assume that there are no deals for bulk)
3. What is the value of $4 \cdot (-1 + 2 - 3 + 4 - 5 + 6 - 7 + \cdots + 1000)$?
4. Eight friends ate at a restaurant and agreed to share the bill equally. Because Judi forgot her money, each of her seven friends paid an extra \$2.50 to cover her portion of the total bill. What was the total bill?
5. Hammie is in the 6th grade and weighs 106 pounds. Her quadruplet sisters are tiny babies and weigh 5, 5, 6, and 8 pounds. Which is greater, the average (mean) weight of these five children or the median weight, and by how many pounds?
(A) median, by 60 (B) median, by 20 (C) average, by 5
(D) average, by 15 (E) average, by 20
6. Trey and his mom stopped at a railroad crossing to let a train pass. As the train began to pass, Trey counted 6 cars in the first 10 seconds. It took the train 2 minutes and 45 seconds to clear the crossing at a constant speed. Which of the following was the most likely number of cars in the train?
7. A fair coin is tossed 3 times. What is the probability of at least two consecutive heads?

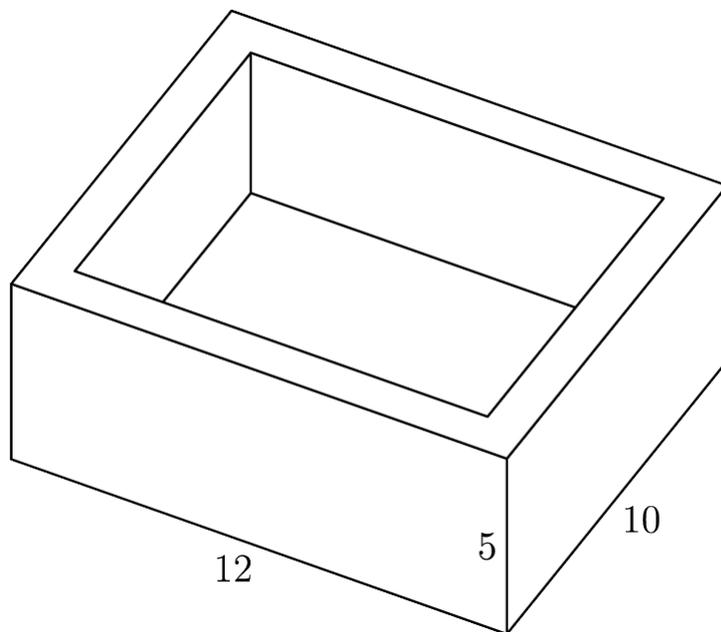
8. The number in each box below is the product of the numbers in the two boxes that touch it in the row above. For example, $30 = 6 \times 5$. What is the missing number in the top row?



9. The Incredible Hulk can double the distance it jumps with each succeeding jump. If its first jump is 1 meter, the second jump is 2 meters, the third jump is 4 meters, and so on, then on which jump will it first be able to jump more than 1 kilometer?
10. What is the ratio of the least common multiple of 180 and 594 to the greatest common factor of 180 and 594?
11. Ted's grandfather used his treadmill on 3 days this week. He went 2 miles each day. On Monday he jogged at a speed of 5 miles per hour. He walked at the rate of 3 miles per hour on Wednesday and at 4 miles per hour on Friday. If Grandfather had always walked at 4 miles per hour, he would have spent less time on the treadmill. How many minutes less?

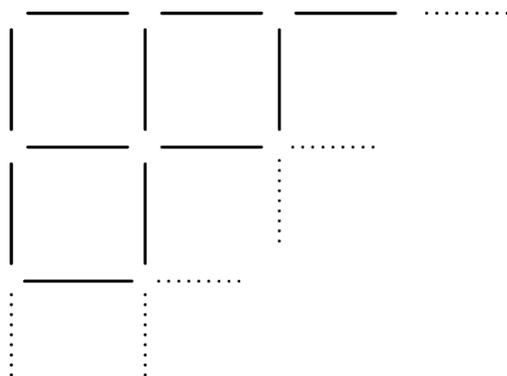
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12. At the 2013 Winnebago County Fair a vendor is offering a "fair special" on sandals. If you buy one pair of sandals at the regular price of 50, you get a second pair at a 40% discount, and a third pair at half the regular price. Javier took advantage of the 'fair special' to buy three pairs of sandals. What percentage of the 150 dollar regular price did he save?
13. Abe holds 1 green and 1 red jelly bean in his hand. Bob holds 1 green, 1 yellow, and 2 red jelly beans in his hand. Each randomly picks a jelly bean to show the other. What is the probability that the colors match?
14. If $3^p + 3^4 = 90$, $2^r + 44 = 76$, and $5^3 + 6^s = 1421$, what is the product of p , r , and s ?
15. A number of students from Fibonacci Middle School are taking part in a community service project. The ratio of 8th-graders to 6th-graders is 5 : 3, and the ratio of 8th-graders to 7th-graders is 8 : 5. What is the smallest number of students that could be participating in the project?
16. The sum of six consecutive positive integers is 2013. What is the largest of these six integers?

17. Isabella uses one-foot cubical blocks to build a rectangular fort that is 12 feet long, 10 feet wide, and 5 feet high. The floor and the four walls are all one foot thick. How many blocks does the fort contain?



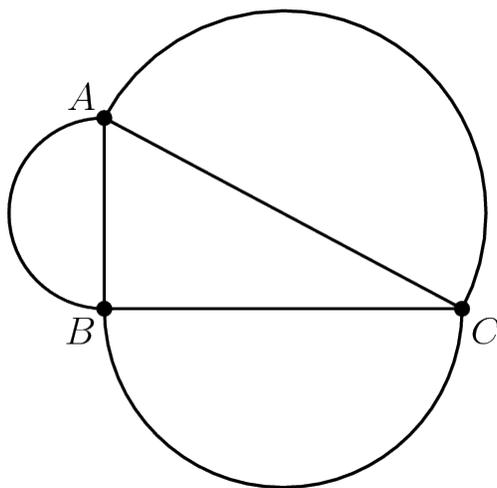
18. Bridget, Cassie, and Hannah are discussing the results of their last math test. Hannah shows Bridget and Cassie her test, but Bridget and Cassie don't show theirs to anyone. Cassie says, 'I didn't get the lowest score in our class,' and Bridget adds, 'I didn't get the highest score.' What is the ranking of the three girls from the highest score to the lowest score?
19. A 1×2 rectangle is inscribed in a semicircle with longer side on the diameter. What is the area of the semicircle?

20. Samantha lives 2 blocks west and 1 block south of the southwest corner of City Park. Her school is 2 blocks east and 2 blocks north of the northeast corner of City Park. On school days she bikes on streets to the southwest corner of City Park, then takes a diagonal path through the park to the northeast corner, and then bikes on streets to school. If her route is as short as possible, how many different routes can she take?
21. Toothpicks are used to make a grid that is 60 toothpicks long and 32 toothpicks wide. How many toothpicks are used altogether?



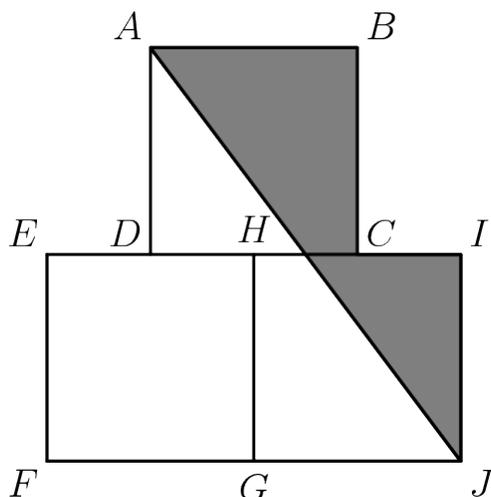
22. A taxi ride costs \$1.50 plus \$0.25 per mile traveled. How much does a 5-mile taxi ride cost?
23. Alice is making a batch of cookies and needs $2\frac{1}{2}$ cups of sugar. Unfortunately, her measuring cup holds only $\frac{1}{4}$ cup of sugar. How many times must she fill that cup to get the correct amount of sugar?

24. Angle ABC of $\triangle ABC$ is a right angle. The sides of $\triangle ABC$ are the diameters of semicircles as shown. The area of the semicircle on \overline{AB} equals 8π , and the arc of the semicircle on \overline{AC} has length 8.5π . What is the radius of the semicircle on \overline{BC} ?

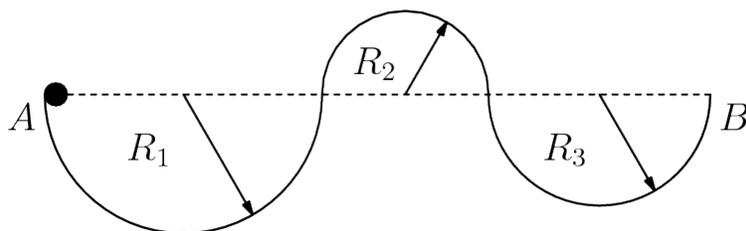


25. A softball team played ten games, scoring 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10 runs. They lost by one run in exactly five games. In each of their other games, they scored twice as many runs as their opponent. How many total runs did their opponents score?
26. Tom, Dorothy, and Sammy went on a vacation and agreed to split the costs evenly. During their trip Tom paid \$105, Dorothy paid \$125, and Sammy paid \$175. In order to share costs equally, Tom gave Sammy t dollars, and Dorothy gave Sammy d dollars. What is $t - d$?
27. Joey and his five brothers are ages 3, 5, 7, 9, 11, and 13. One afternoon two of his brothers whose ages sum to 16 went to the movies, two brothers younger than 10 went to play baseball, and Joey and the 5-year-old stayed home. How old is Joey?

28. Squares $ABCD$, $EFGH$, and $GHIJ$ are equal in area. Points C and D are the midpoints of sides IH and HE , respectively. What is the ratio of the area of the shaded pentagon $AJICB$ to the sum of the areas of the three squares?

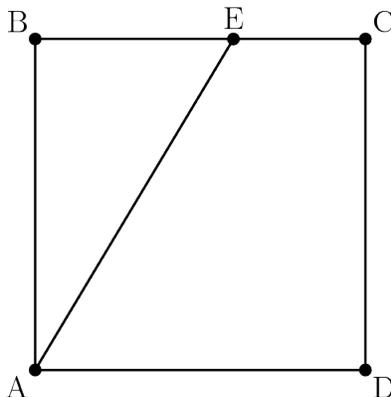


29. A ball with diameter 4 inches starts at point A to roll along the track shown. The track is comprised of 3 semicircular arcs whose radii are $R_1 = 100$ inches, $R_2 = 60$ inches, and $R_3 = 80$ inches, respectively. The ball always remains in contact with the track and does not slip. What is the distance the center of the ball travels over the course from A to B?



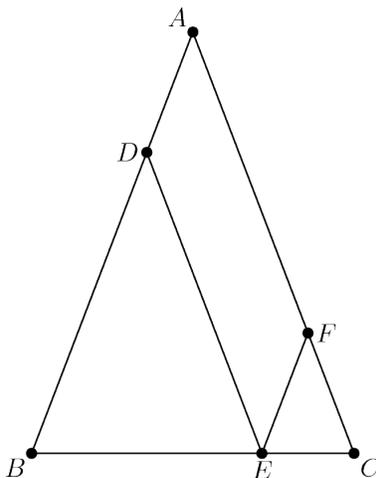
30. What is the value of $\frac{2^{2014} + 2^{2012}}{2^{2014} - 2^{2012}}$?

31. Square $ABCD$ has side length 10. Point E is on \overline{BC} , and the area of $\triangle ABE$ is 40. What is BE ?



32. A student must choose a program of four courses from a menu of courses consisting of English, Algebra, Geometry, History, Art, and Latin. This program must contain English and at least one mathematics course. In how many ways can this program be chosen?
33. In a recent basketball game, Shenille attempted only three-point shots and two-point shots. She was successful on 20% of her three-point shots and 30% of her two-point shots. Shenille attempted 30 shots. How many points did she score?
34. A flower bouquet contains pink roses, red roses, pink carnations, and red carnations. One third of the pink flowers are roses, three fourths of the red flowers are carnations, and six tenths of the flowers are pink. What percent of the flowers are carnations?
35. A student council must select a two-person welcoming committee and a three-person planning committee from among its members. There are exactly 10 ways to select a two-person team for the welcoming committee. It is possible for students to serve on both committees. In how many different ways can a three-person planning committee be selected?

36. In $\triangle ABC$, $AB = AC = 28$ and $BC = 20$. Points D , E , and F are on sides \overline{AB} , \overline{BC} , and \overline{AC} , respectively, such that \overline{DE} and \overline{EF} are parallel to \overline{AC} and \overline{AB} , respectively. What is the perimeter of parallelogram $ADEF$?



37. How many three-digit numbers are not divisible by 5, have digits that sum to less than 20, and have the first digit equal to the third digit?
38. The squares of a 3×3 table are labelled $1, 2, \dots, 9$ as shown. In how many ways can we shade five of the squares so that no row or column is completely shaded?

1	2	3
4	5	6
7	8	9