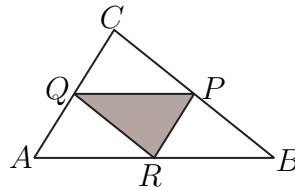


Blitz, Page 1

1. You toss two fair dice. What is the probability of getting a “double,” that is, two 1’s or two 2’s or two 3’s or two 4’s or two 5’s or two 6’s? Express your answer as a common fraction. 1. _____

2. Triangle ABC has area 100 cm^2 . Point P is the midpoint of BC , Q is the midpoint of CA , and R is the midpoint of AB . What is the area of the shaded triangle PQR ? 2. _____ cm^2



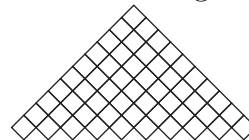
3. Three numbers form an arithmetic sequence. The smallest of the three numbers is -10 and the largest is 22 . What is the sum of the three numbers? 3. _____

4. At a club picnic, 30 people ate 1 hot dog each, 40 people ate 2 hot dogs each, and everyone else ate 3 hot dogs each. Altogether, 200 hot dogs were eaten. How many people ate 3 hot dogs? 4. _____ people

5. What is the sum of the cubes of the solutions of the equation 5. _____

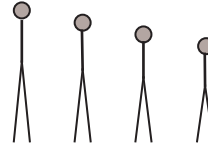
$$x^2 + x - 2 = 0?$$

6. The figure below is made up of a number of small squares, each of which has sides of length 2 cm. What is the total area of the figure? 6. _____ cm^2



7. Alicia and Beti ran for Student Council president. Alicia got 55% of the votes, and Beti got the rest. Alicia got 80 more votes than Beti. How many votes did Alicia get? 7. _____ votes

8. Four people of different heights are lined up in a row, from tallest down to shortest. Two people who are next to each other swap positions. Then, again two neighbours swap positions, and so on. What is the least total number of swaps that gets the people lined up from shortest to tallest?

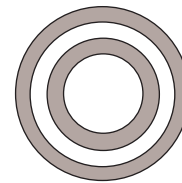


8. _____ swaps

9. Alfred walks for an hour every day. If he increases the daily distance walked by 20%, and decreases his average speed by 20%, how many *extra* minutes will he walk each day ?

9. _____ minutes

10. The picture below shows four circles with the same center, with two of the “rings” between them coloured gray. The four circles have radius 5, 7, 9, and 11 units respectively. What is the ratio of the area of the inner gray ring to the area of the outer gray ring? Express your answer as a common fraction.



10. _____

11. Let $Q = 2 \times 3 \times 5 \times 7$. How many primes are there among the numbers $Q + 2, Q + 3, Q + 4, Q + 5, Q + 6, Q + 7, Q + 8, Q + 9,$ and $Q + 10$?

11. _____ primes

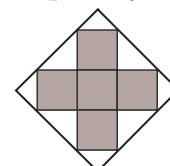
12. Alper rolls 3 standard dice once. What is the probability that the sum of the numbers rolled is 5 or more? Express your answer as a common fraction.

12. _____

13. Let (a, b) be the coordinates of the center of the circle that passes through $(1, 0), (0, 1),$ and $(5, 5)$. What is the value of $a + b$? Express your answer as a common fraction.

13. _____

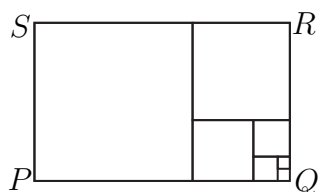
14. In the figure below, the cross (shaded) is made up of five congruent squares. The cross is inscribed in a big square, with the diagonals of the big square parallel to the arms of the cross. What is the ratio of the area of the cross to the area of the big square? Express your answer as a common fraction.



14. _____

15. If x is the temperature measured in degrees Celsius ($^{\circ}\text{C}$), then the temperature y measured in degrees Fahrenheit is given by the formula $y = (9/5)x + 32$. If the temperature at the North Pole is -40 degrees Fahrenheit, what is it in $^{\circ}\text{C}$? 15. _____ $^{\circ}\text{C}$

16. In the figure below, rectangle $PQRS$ has been divided into 7 squares as shown. If the smallest squares in the figure (there are 2 of them) each have side length equal to 1 unit, what is the length of PQ ? 16. _____ units



17. The figure below is a 3 by 3 grid of points. Each point is 1 cm from its nearest horizontal and vertical neighbours. There are 10 rectangles whose corners are points of the grid. What is the average area of these 10 rectangles? Give the answer as a decimal, to 1 decimal place. 17. _____ cm^2



18. Let $N = 2^{17} \times 5^{10}$. What is the total number of digits in the decimal representation of N ? 18. _____ digits

19. One corner of a square is at the origin $(0, 0)$. The diagonally opposite corner is at $(7, 1)$. How many square units are in the area of the square? 19. _____ units^2

20. A computer prints the squares of all the integers from 1 to 99 inclusive. What is the total number of digits that the computer prints? 20. _____ digits

21. Suppose that

$$ab = 6, \quad bc = 8, \quad cd = 10, \quad \text{and} \quad de = 12.$$

What is the value of $\frac{a}{e}$? Express your answer as a common fraction.

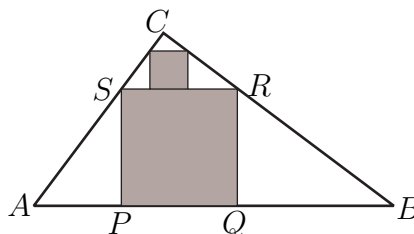
21. _____

22. The wheels of a car travelling down Main Street make 7.5 revolutions per second. The diameter of each wheel is $\frac{2}{\pi}$ metres. What is the speed of the car in kilometres per hour?

22. _____ km/hr

23. Triangle ABC is right-angled at C , with $AC = 3$ and $BC = 4$. The large shaded square $PQRS$ is inscribed in $\triangle ABC$, with P and Q on AB . The small shaded square is inscribed in $\triangle SRC$, with one side along SR . What is the ratio of the side of the small shaded square to the side of the large shaded square? Express your answer as a common fraction.

23. _____



24. If x is any real number, then $[x]$ denotes the greatest integer which is less than or equal to x . For example, $[2.33] = 2$ and $[6] = 6$. For what integer n is

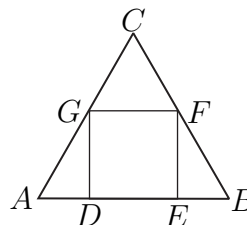
24. _____

$$[\sqrt{1}] + [\sqrt{2}] + [\sqrt{3}] + [\sqrt{4}] + [\sqrt{5}] + \dots + [\sqrt{n-1}] + [\sqrt{n}]$$

equal to 50?

25. In the figure below, the square $DEFG$ is inscribed in $\triangle ABC$, with D and E on AB , F on BC and G on CA . Given that $DE = FC = GC = 1$ unit, what is the area of $\triangle ABC$? Express your answer in the form $\frac{a\sqrt{b+c}}{d}$, where a , b , c , and d are integers.

25. _____ units²



26. Three (distinct) vertices of the regular 12-gon below are chosen at random. What is the probability that no two of these vertices are adjacent to each other? Express your answer as a common fraction.

26. _____

