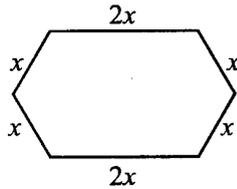


1. How many units are in the perimeter of the polygon when $x = 9$?



1. _____

2. What is the units digit of the least whole number greater than 1000 whose digits are all different?

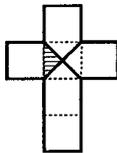
2. _____

3. In a class of twenty students, five like to go camping and ten like to ride bikes. What is the greatest possible number of students that like to do neither?

3. _____

4. The pattern in the diagram can be folded along dashed lines to form a cube. The shaded triangle has an area of 12 square units. How many square units are in the surface area of the cube?

4. _____



5. Your hover board gets 120 km per cm^3 of fuel. Hover board fuel costs \$8 per cm^3 . How many dollars will it cost you to travel 2250 km on your hover board?

5. _____

6. What units digit a will make the addition problem correct?

6. _____

$$\begin{array}{r} 23a \\ 524 \\ + 36a \\ \hline 1124 \end{array}$$

7. Ali chews $\frac{2}{3}$ of a pack of gum each day. How many days will 72 packs of gum last him?

7. _____

8. Five congruent squares are placed side-to-side as shown to make a single rectangle whose perimeter is 168 inches. How many square inches are in the area of one of the squares?



8. _____

9. The sum of three different positive unit fractions is $\frac{7}{8}$. What is the least number that can be the sum of the denominators of these fractions?

9. _____

10. Two friends each have five coins consisting of pennies, nickels, dimes or quarters, with neither friend having more than two of any particular coin. What is the greatest possible difference in cents between the sum of the values of their coins?

10. _____

11. Select four numbers from the table, selecting exactly one from each row and exactly one from each column. What is the sum of the four numbers that produce the least possible product?

11. _____

3	5	7	14
15	8	6	4
2	9	10	11
13	12	15	1

12. The length of each side of a regular octagon is five units less than the length of a side of a regular hexagon. The perimeter of the octagon is equal to the perimeter of the hexagon. How many units are in the length of a side of the octagon?

12. _____

13. Jonathan went to a store, spent half of his money and then \$8 more. He went to a second store, spent half of his remaining money and then \$8 more. Given that he had \$7 left, how many dollars did he have before he started shopping?

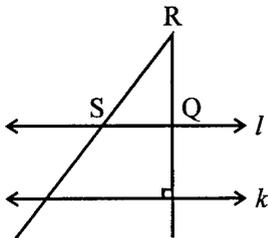
13. _____

14. What is the sum of the digits a and b in the following multiplication problem?

$$\begin{array}{r} b3a1 \\ \times \quad b4 \\ \hline 9404 \\ + 470b0 \\ \hline a64b4 \end{array}$$

14. _____

15. In the diagram, $l \parallel k$. What is the number of degrees in the $m\angle SRQ$?



15. _____

16. Sam has \$72 and earns \$6 each day. Katie has \$48 and earns \$8 each day. In how many days will Katie have as much money as Sam?

16. _____

17. The perimeter of a rectangle is 50 inches and its area is 154 square inches. How many inches are in the length of one of its shorter sides?

17. _____

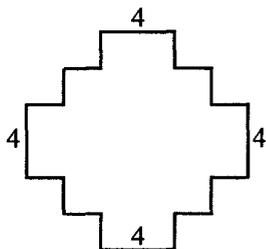
18. The student council has 11 members who signed up to be on committees for the school dance. The committees are listed below. There is only one time slot open for meetings each day and each committee needs one full time slot to get its work done. What is the least number of days needed so that each member can attend the committee meetings without conflicts?

18. _____

Band	Sean, Kirsten, Mike
Decorations	Kirsten, Lien, Kim, Angela
Tickets	Kim, David, Dan, Lee
Food	Shannon, Elise, Mike, David
Chaperones	Lien, Sean

19. In the diagram, the sides indicated are 4 units, and all other sides are 2 units. If all of the angles in the figure are right angles, how many square units are in the area of this figure?

19. _____



20. The shape of the sign outside of Bob's Burger Barn is a regular octagon. How many degrees are in the measure of an interior angle of this sign?

20. _____

21. Eight unit squares are arranged to form a polygon. How many units are in the minimum perimeter of such a polygon?

21. _____

22. A perfect number is a number that is equal to the sum of its proper factors. For example, $6 = 1 + 2 + 3$ and is therefore a perfect number. All even perfect numbers can be expressed as the product $2^{p-1}(2^p - 1)$, where p and $2^p - 1$ are both prime numbers. What is the sum of the proper factors of the perfect number formed when $p = 5$?

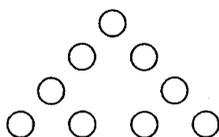
22. _____

23. Given that $\Delta + q = 59$ and $(\Delta + q) + q = 106$, what is the value of Δ ?

23. _____

24. The digits $1, 2, 3, \dots, 9$ are arranged, one per circle, in the triangle shown so that the sum of the numbers in the four circles along each side of the triangle is 17. What is the sum of the numbers in the three circles at the vertices of the triangles?

24. _____



25. How many factors of 3003 are prime numbers? 25. _____
26. Given that x is a positive integer and $y = 5^x$, what is the greatest value of y for which $y < 30,000$? 26. _____
27. The first day of work, Jed stuffed $\frac{1}{5}$ of the envelopes. The second day, he stuffed $\frac{1}{4}$ of the remaining ones. The third day, he stuffed $\frac{1}{3}$ of the ones still unstuffed, and, on the fourth day, he stuffed $\frac{1}{2}$ of the envelopes still left. What fraction of the original number of envelopes are left for him to stuff on the fifth day? Express your answer as a common fraction. 27. _____
28. A square is inscribed in a circle. How many square centimeters are in the area of the square given that the diameter of the circle is 12 centimeters in length? 28. _____
29. The mean price of a set of tapes and CDs is \$8.00. The tapes average \$7.00 and the CDs average \$10.00. What is the ratio of the number of CDs to the number of tapes? Express your answer as a common fraction. 29. _____
30. Alex owns three times as many brown shoes as red shoes, twice as many black shoes as brown shoes, and four times as many white shoes as red shoes. What is the ratio of the number of white shoes to the number of black shoes he owns? Express your answer as a common fraction. 30. _____