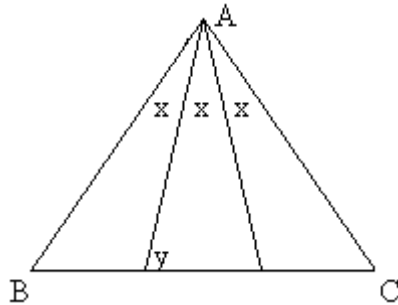
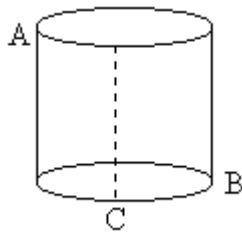


## 第十套

1. A time lapse camera takes pictures once every 40 seconds. How many pictures does it take in a 24 hour period? (Assume that it takes its first picture 40 seconds after the start of the time period.)



2. Triangle ABC is equilateral. What is the degree measure of angle  $y$  ? (Ignore the degree sign when gridding your answer)
3. If a sack of dried dog food feeds 4 dogs or 5 puppies for one week, then 5 sacks of the food will feed 15 puppies and how many dogs ?
4. The sum of three numbers is 6. Each number is increased by 20 and the new numbers are multiplied by 10. What is the sum of the resulting numbers?
5. What is the largest odd-numbered factor of 4500 ?



6. Points A and B are on the top and bottom edges of a cylindrical roll of paper of height 8 and circumference 12. A and B are diagonally opposite each other. The paper is cut along line C and opened out. How far apart are A and B on the flat surface?
7. 2 cars travel from the same point along parallel lanes of a highway for a distance of 10 miles. When car M, travelling at 60 miles an hour reaches the end of the distance, how much further will car N have to travel if it is travelling at 48 miles an hour?

8. ♣ ♥ ¥ ♠ □

How many different **3-symbol** arrangements of the symbols above are possible if the symbol □ must be in the last position, and the symbol ♣ can be used in only one arrangement. The other symbols can be used more than once in an arrangement.

If  $\frac{2+3}{x} = \frac{2+x}{3}$

9. What one value for  $x$  can be correctly entered into the answer grid?
10. What positive value for  $k$  would make the following the equations of a pair of parallel lines on the same coordinate axes?
- $y = kx \diamond 2$  and  $ky = 9x \diamond 6$

参考答案:

**1. Correct Answer:** 2160

**Explanation:**

First calculate how many seconds there are in a 24 hour period.

$$24 \times 60 \times 60 = 86400$$

Divide by 40 to find how many pictures = 2160

**2. Correct Answer:** 80

**Explanation:**

Since the big triangle is equilateral, angle BAC = 60, and  $x = 60/3 = 20$

Now, since the angles of measure X divide the angle equally, the line segments from A to BC are also equal. This makes y the measure of one of a pair of equal angles of an isosceles triangle. So  $y = (180 - x)/2$ ;  $y = 80$

**3. Correct Answer:** 8

**Explanation:**

Since five puppies require one sack per week, 15 puppies require 3 sacks. So out of the five available, the puppies will use 3, leaving 2 for the dogs. One sack feeds four dogs, so 2 sacks will feed 8.

**4. Correct Answer:** 660

**Explanation:**

Let the numbers be x, y, and z

Follow the directions for each number: increase by 20 and multiply the result by 10. Then add the terms:

$$10(x + 20) + 10(y + 20) + 10(z + 20) = \text{required sum}$$

$$10x + 200 + 10y + 200 + 10z + 200 = 600 + 10(x + y + z)$$

$$\text{Since } x + y + z = 6; \text{ the sum} = 600 + 60 = 660$$

**5. Correct Answer:** 1125

**Explanation:**

Factorize the number

$$4500 = 2 \times 2250 = 2 \times 2 \times 1125$$

No need to go any further because 1125 is odd.

**6. Correct Answer:** 10

**Explanation:**

When opened out, the cylinder forms a rectangle of 12 x 8.

The straight line distance between A and B will be from a point on the long edge to a point on the opposite edge, such that the line forms the hypotenuse of a triangle height 8, and base half the circumference (=6). This is a 3-4-5 triangle, and the hypotenuse will be 10.

**7. Correct Answer:** 2

**Explanation:**

Speed = distance/time; time = distance/speed

Car M traveling at 60mph covers 10 miles in 10/60 hours.

In the same time, car N traveling at 48mph will cover  $48 \times 10/60$  miles = 8

Car N will therefore still have 2 miles to travel.

**8. Correct Answer:** 10

**Explanation:**

There is one 3-symbol arrangement allowed using the first symbol.

Further arrangements can be made with the last symbol in the third place, and choosing any of the

remaining three symbols for the first place and any of the same three symbols for the second place. This give  $3 \times 3$  arrangements = 9

Along with the first possibility, this makes 10

**9. Correct Answer: 3**

**Explanation:**

To make both sides equal, the obvious thing to do is to substitute 3 for x

**10. Correct Answer: 3**

**Explanation:**

First rearrange the second equation to fit the form  $y = mx + c$ , where m = slope

We get  $y = (9/k)x - 6/k$

Parallel lines have the same slope. From equation 1, slope = k

From equation 2, slope =  $9/k$ . Equating the two slopes we get  $k = 9/k$ ;  $k^2 = 9$ ;  $k = 3$