2 When divided by an integer, both 110 and 35 get the remainder 10. The maximum value of the integer is _____ .

1 When divided by an integer larger than 1, all of 412, 133, and 257 get the same remainder. The maximum value of the integer is _____ .

8 According to the solution below, $2 + 4 + 6 + 8 + \cdots + 98 + 100 =$ _____ .

$$1 + 2 + 3 + \cdots + 98 + 99 + 100 = 101 \times (100 \div 2) = 5050$$

$$1 + 100 = 101$$
$$2 + 99 = 101$$
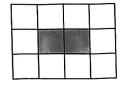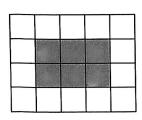$$3 + 98 = 101$$
$$\cdots$$
$$50 + 51 = 101$$

In the growth process of a magic tree, new branches often need a period of "rest" for their own growth, which allows their budding. A sapling only has one branch in the first year. In the second year, the sapling grows a new branch, then the new branch will "rest" for a year and the old branch will still grow a new one the next year. After that, the old branch and the branch that has "rested" for a year will bud together in the current year, while the new branch gro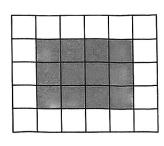wn out in the current year will "rest". Therefore, there will be _____ branches on the magic tree in the 10th year.

Year	1	2	3	4	5
Number of Branch(es)					

2 Observe the figures below and answer the questions.
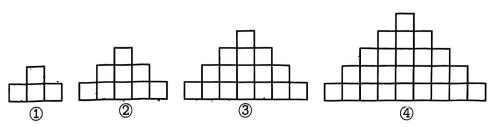

①   ②   ③

(2) There is a total of 72 individual squares (black and white) in the _____th figure.

3 The side length of each small square is 1 cm. The perimeter of the first shape is 10 cm.

①   ②   ③   ④

(2) The 11th shape has a perimeter of _____ cm, which is made up of _____ small squares.

2 A stairway consists of 7 stairs in total. Candy can only climb one or two stairs at a time. She can reach the 7th stair in _____ ways.

3 A monkey has 9 peaches. It can only eat 1 or 2 peaches each day. There are _____ ways to eat all peaches.
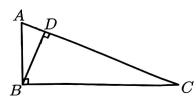
4 A stairway consists of 12 stairs in total. Betty can only climb one or two stairs at a time. She can reach the 12th stair in _____ ways.

2 There is a total of 8 apples. Only one, two, or three apples can be picked every time. The total number of different ways to pick up all apples is _____ .

6 There is a rectangular land, and the perimeter of this land is 80. The ratio of the length of the land to that of the width of the land is 5 : 3.The length of the land is _____ , and the width of the land is _____ .

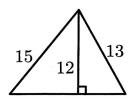As shown below, in $Rt\triangle ABC$, $AC = 10$, $AD : AC = 9 : 25$. $BD = 4.8$. $BC = $ _____ .

2 Given side lengths of triangles, determine whether each triangle is a right triangle.
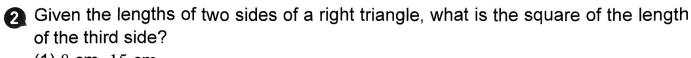
(1) 20 cm, 21 cm, 29 cm   (2) 9 m, 16 m, 23 m

A. Only (1) is a right triangle.

B. Only (2) is a right triangle.

C. (1) and (2) are both right triangles.

D. Both (1) and (2) are not right triangles.

E. It is impossible to determine.

(2, The perimeter of this shape is _____ (excluding the line inside the shape).
The area of this shape is _____ .

2 Given the lengths of two sides of a right triangle, what is the square of the length of the third side?

(1) 8 cm, 15 cm

(2) 13 m, 19 m

1 In triangle ABC, $BC = 4.2$. $BD : DC = 5 : 2$. $AD = 1.6$. The perimeter of triangle ABC is _____ .

2 The actual distance between Avril's home and her school is 300 m, and the distance between her home and school on a map is 1.5 cm. The scale of this map is _____ . The distance between Avril's home and the library is 2.5 cm. The actual distance between her home and the library is _____ m.

4 The actual length and width of a rectangular metal plate are 8 mm and 6 mm, respectively. An engineer wants to draw it on a graphic design with a scale of 50 : 1. The area of the metal plate on the graphic design will be _____ cm^2.

1. *AB* and *DE* are two upright flag poles on the ground. *AB* = 8 m. The length of the shadow of *AB* is 3.6 m. The ratio of the length of *AB* to that of *DE* is 5 : 3. At the same time, the length of the shadow of *DE* is _____ m.

(2) $2\dfrac{7}{8} \times 0.2 \times 8\% + 0.4\% = $ _____

(5) When 999 was divided by a 2−digit number n, the remainder was equal to 3. What was the remainder when 2001 was divided by n? (2001 Math Kangaroo Problem, Level 7 − 8. Question #27)

A. 3   B. 5   C. 6   D. 7   E. 9