

※ You can receive 1.5 points each for problems number 1 to 30.

---

In problems 1-2, after solving each question, add all the digits. (For example, if the answer is 148, then write down the final answer as  $1+4+8=13$ .)

1.  $27 \times 3 - 96 \div 8 + 15$

2.  $(8+4) \times (14 - (11+7) \div 3)$

In problems 3-7, write the decimal part after solving each question. (For example, if the answer is 18.2 or 18.20, then write the final answer as 2. If the answer is 2.54 or 2.054, then write the final answer as 54.)

3. 
$$\begin{array}{r} 6.9 \\ + 3.82 \\ \hline \end{array}$$

4.  $4.76 + 17.8$

5. 
$$\begin{array}{r} 9.3 \\ - 5.56 \\ \hline \end{array}$$

6.  $15.6 - 2.47$

7. 
$$\begin{array}{r} 5.86 \\ \times 1.3 \\ \hline \end{array}$$

In problems 8-10, write the greatest common factor for each set of numbers.

**8.**

15, 21

GCF : \_\_\_\_\_

**9.**

60, 105

GCF : \_\_\_\_\_

**10.**

54, 81, 126

GCF : \_\_\_\_\_

In problems 11-13, write the least common multiple for each set of numbers.

**11.**

45, 60

LCM : \_\_\_\_\_

**12.**

42, 78

LCM : \_\_\_\_\_

**13.**

16, 20, 60

LCM : \_\_\_\_\_

In problems 14-16, reduce each fraction into its simplest form. Then add both digits of the numerator and the denominator. (For example, if the answer is  $\frac{2}{5}$ , then write the final answer as  $2+5=7$ .)

14.  $\frac{32}{72}$

15.  $\frac{65}{104}$

16.  $\frac{57}{133}$

In problems 17-25, solve the calculation into its simplest form as a proper fraction or a mixed number. Write the numerator of the fraction as your answer. (For example, if the answer is  $3\frac{10}{6}$ , make  $4\frac{2}{3}$  and write the final answer as 2.)

17.  $3\frac{2}{7} + \left(5 - 3\frac{4}{7}\right)$

18.  $7 - 2\frac{5}{17} + \frac{14}{17}$

19.  $4\frac{7}{9} + 1\frac{8}{15}$

$$20. 4\frac{5}{14} + 2\frac{10}{21}$$

$$23. 4\frac{13}{27} \div 1\frac{5}{9}$$

$$21. 8\frac{7}{12} - 2\frac{11}{18}$$

$$24. \frac{3}{7} \times \frac{13}{16} \div 1.5$$

$$22. 3\frac{3}{7} \times 1\frac{8}{9}$$

$$25. 2\frac{2}{7} \div 2.4 \div \frac{3}{14}$$

In problems 26, calculate the quotient up to the hundredths place. Then, write only the decimal part after adding both the quotient and the remainder. (For example, if the quotient is 2.56 and the remainder is 0.004, make  $2.56 + 0.004 = 2.564$ , and write the final answer as 564.)

26.

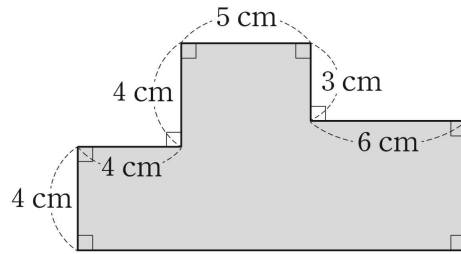
$$7.2 \overline{) 45.9}$$

In 27-28, solve each equation.

27.  $(x \times 1.2) \div 3\frac{1}{5} = 6$

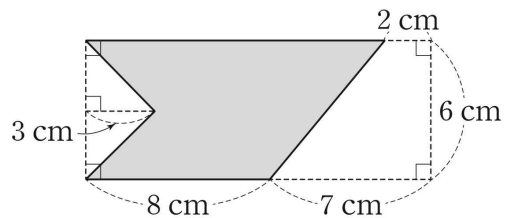
28.  $\left(x + \frac{1}{3}\right) \div 4 = 1\frac{5}{6}$

29. Find the area of the figure.



cm<sup>2</sup>

30. Find the area of the shaded section.



cm<sup>2</sup>

※ You can receive 2.0 points each for problems number 31 to 40.

---

- 31.** There are four sizes of cup. 2 cups of Size B is the same as 1 cup of Size A, 3 cups of Size C is the same as 1 cup of Size B, and 4 cups of Size D is the same as 1 cup of Size C. How many cups of Size D are the same as 1 cup of Size A?

\_\_\_\_\_ cups

- 32.** There is a rectangular-shaped field at Paul's house. The perimeter of the field is 22 m. If the length of the field is 6 m, what is the area of the field?

\_\_\_\_\_ m<sup>2</sup>

- 33.** Sarah has 0.47 km of red string and 0.29 km of blue string. How many meters of string does Sarah have altogether? (Note: 1 km = 1000 m)

\_\_\_\_\_ m

- 34.** The distance from Tommy's house to school is 1.65 km. When Tommy leaves his house to go to school, he starts to run. If Tommy runs 0.9 km and then walks the rest of the way, what is the distance that he walks? Write down only the decimal part of the answer. (For example, if the answer is 6.75 km write down as 75.)

\_\_\_\_\_

- 35.** Rachael is going to place some squares of red paper onto a 180 cm by 120 cm rectangle. How long are the sides of the largest square that Rachael could use to fill the rectangle completely?

\_\_\_\_\_ cm

- 36.** The museum is  $1\frac{5}{6}$  km away from Suji's house and the library is  $2\frac{1}{4}$  km away from the museum. Suji walked from his house to the museum and then to the library. How many kilometers did Suji walk? Write down the sum of the denominator and numerator of the mixed number. (For example, if the answer is  $4\frac{2}{3}$ , write down as  $3+2=5$ .)

\_\_\_\_\_

- 37.** Robin collected  $3\frac{1}{6}$  kg of milk cartons over two months. If he collected  $1\frac{2}{3}$  kg of milk cartons during the first month, how many kilograms did Robin collect milk cartons during the second month? Write down the sum of the denominator and numerator of the mixed number. (For example, if the answer is  $4\frac{2}{3}$ , write down as  $3+2=5$ .)

\_\_\_\_\_

**38.** Sam and Silvia each have a bar of soap. The weight of Sam's soap is  $3\frac{5}{6}$  g and the weight of Silvia's soap is  $\frac{4}{5}$  of Sam's soap. Express the weight of Silvia's soap in the format of  $A\frac{B}{C}$  g. Find the value of  $A+B+C$ . (Note that  $\frac{B}{C}$  is an irreducible fraction.)

\_\_\_\_\_

**39.** A box filled with model robots has a weight of 11.6 kg. If there are 15 boxes of model robots, what is their total weight?

\_\_\_\_\_ kg

**40.** Nina has a length of tape and cut it into two pieces. The length of the two pieces are 8.1 cm and 18.9 cm, respectively. When you express the ratio of the longer piece to the shorter piece in the simplest form  $A : B$ , find the value of  $A+B$ ?

\_\_\_\_\_



41. How many squares can you get in the following picture?

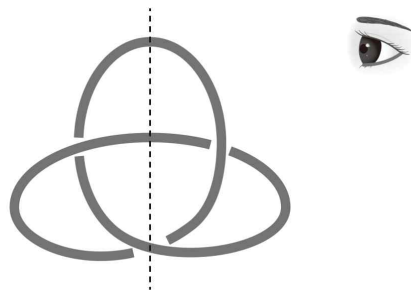
[2.3 points]



Answer : \_\_\_\_\_

42. Find the image you would see if a mirror were placed on the dotted line.

[2.3 points]



Answer : \_\_\_\_\_

43. The following shows a rule for finding the sum of odd numbers. What number goes in ? [3.3 points]

$$\begin{aligned} 1 + 3 &= 2 \times 2 = 4 \\ 1 + 3 + 5 &= 3 \times 3 = 9 \\ 1 + 3 + 5 + 7 &= 4 \times 4 = 16 \\ &\vdots \\ 1 + 3 + 5 + \dots + 27 + 29 &= \Delta \times \Delta = \text{} \end{aligned}$$

Answer : \_\_\_\_\_

44. You are going to complete the following number sentence. When you are doing this, each symbol, +, −, and × can be used only once. Among all the possible combinations, what is the greatest value that you can get? [3.3 points]

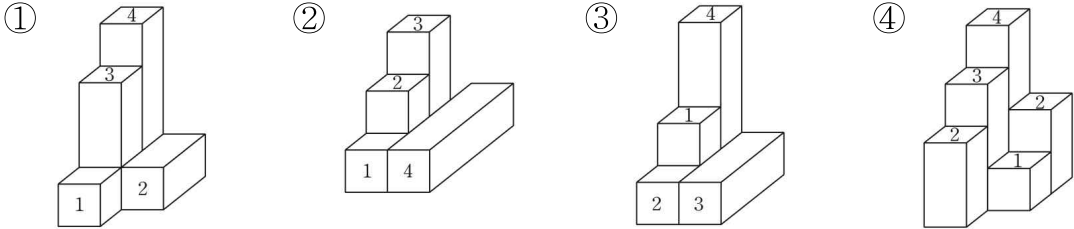
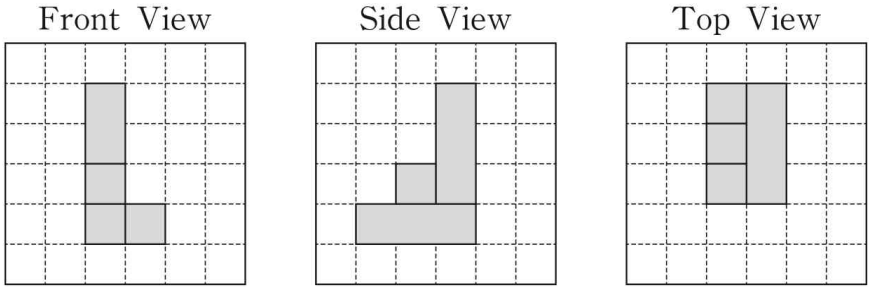
$$9 \square 5 \square 8 \square 7$$

Answer : \_\_\_\_\_

45. Among the 3-digit numbers that contain both numerals 0 and 3, how many are even numbers? [3.3 points]

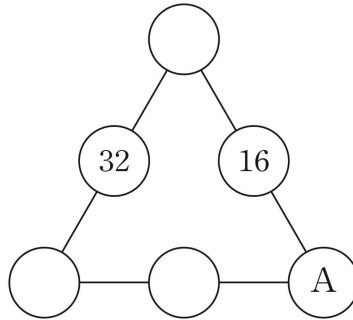
Answer : \_\_\_\_\_

46. The front, side, and top views of a set of blocks are shown in the diagrams below. Find the block that matches the diagrams. [3.3 points]



Answer : \_\_\_\_\_

47. Write down the four numbers 1, 2, 4, and 8 in the following figure. Every number should be used only once, and the multiple of the three numbers on each side of the triangle should be the same  $S$ . Find the number that should be written in  $A$  and write the sum of  $S$  and  $A$  as your answer. [4.3 points]



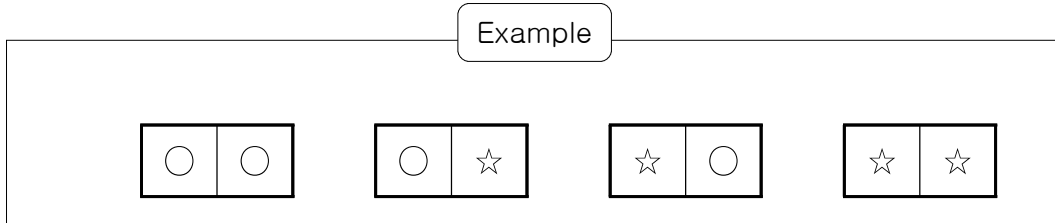
Answer : \_\_\_\_\_

48. The following numbers are arranged by repeating the pattern that can be seen in the numbers 1 to 16. What is the value of  $A$ ? [4.3 points]

6	7	10	11								
5	8	9	12	21							A
4	3	14	13	20	19						
1	2	15	16	17	18	31	32	33	34	47	48

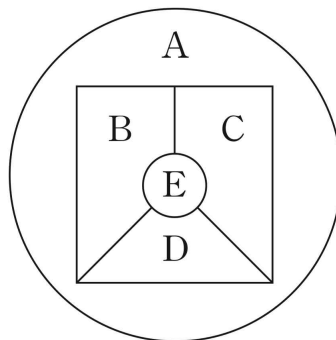
Answer : \_\_\_\_\_

49. The example shows that there are 4 ways to place circles (○) or stars (☆) in 2 empty boxes (□). Find the number of ways to place circles (○) or stars (☆) in 3 empty boxes (□). [4.3 points]



Answer : \_\_\_\_\_

50. The figure below represents 5 nations A, B, C, D, and E. Following the instructions below, paint the 5 nations using all 4 colors: green, yellow, blue, and red. Find the total number of different ways of coloring the figure. [4.3 points]



**Descriptions**

- (1) Each nation should be colored only one color.
- (2) Two nations with a common border should not be colored by the same color.

Answer : \_\_\_\_\_