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

In 1-2, add the numerator and the denominator after solving each question as the simplest form. (For example, if the answer is $\frac{2}{3}$, then write as $2+3=5$.)

1. $\frac{40}{64}$

2. $\frac{52}{91}$

In 3-19, write the numerator after calculating each question as the simplest form of a proper fraction or a mixed number. (For example, if the answer is $3\frac{10}{6}$, make $4\frac{2}{3}$ and write 2.)

3. $3\frac{1}{6}+1\frac{7}{9}$

4. $2\frac{3}{4}+1\frac{5}{6}$

5. $5\frac{7}{12}-3\frac{5}{18}$

6. $8\frac{3}{10}-7\frac{7}{18}$

7. $\dfrac{1}{2}+\left(\dfrac{3}{4}-\dfrac{2}{5}\right)$

8. $3\dfrac{1}{2}-2\dfrac{3}{8}+1\dfrac{1}{6}$

9. $\dfrac{3}{7}\times 2\dfrac{3}{5}$

10. $1.25\times 2\dfrac{2}{9}$

11. $\dfrac{8}{9}\times 1\dfrac{3}{5}\times 3\dfrac{3}{4}$

12. $0.75\times 2\dfrac{7}{10}\times \dfrac{5}{9}$

13. $3\dfrac{2}{3}\div 1\dfrac{4}{7}$

14. $2\dfrac{1}{7}\div 2.4$

15. $3\frac{3}{4} \div 1\frac{2}{3}$

16. $2\frac{1}{2} \div \frac{5}{8} \div 1\frac{5}{9}$

17. $1\frac{2}{3} \times 0.75 \div \frac{5}{6}$

18. $6\frac{2}{3} \div 1\frac{3}{7} \times \frac{1}{2}$

19. $\left(\frac{3}{5} - \frac{1}{6}\right) \times 3\frac{1}{2} \div 2\frac{3}{5}$

In 20-22, write the decimal part after solving each question. (For example, if the answer is 18.2 or 18.20, then write as 2. If the answer is 2.54 or 2.054, then write as 54.)

20.

$$\begin{array}{r} 1.34 \\ \times \quad 13 \\ \hline \end{array}$$

21.

$$\begin{array}{r} 3.7 \\ \times\ 5.4 \\ \hline \end{array}$$

22.

$$\begin{array}{r} 6.2 \\ \times\ 0.33 \\ \hline \end{array}$$

In 23-24, after calculating the quotient up to the hundredths place, write the decimal part of the sum of 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 564.)

23.

$3.4\overline{)\ 8.11}$

24.

$7.4\overline{)\ 58.25}$

In 25-26, solve each equation. (Write down the sum of denominator and numerator of mixed number. For example, if the answer is $4\frac{2}{3}$, write down as $3+2=5$.)

25. $\left(x \div 1\frac{3}{7}\right)+1.7=5\frac{1}{2}$

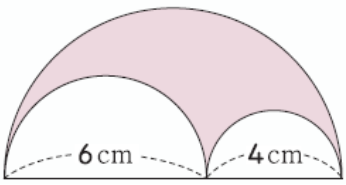
26. $3\frac{1}{2} : x = 2\frac{1}{3} : 0.5$

In 27-28, find the answer after solving the questions. If it is a positive number, put 1 to replace the positive sign. However, if it is a negative number, then put 2 to replace the negative sign for the answer. (For example, if the answer is 45, then write as 145, but if the answer is -3, then write as 23.)

27. $-15-(-4+(-3+1))-8$

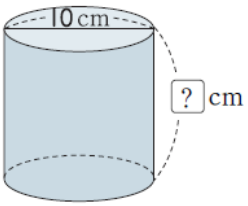
28. $\left(-1\frac{7}{8}\right)\div 1.2\times 0.8\div\left(-\frac{5}{9}\right)\times\left(-2\frac{2}{3}\right)$

29. What is ten times the perimeter of the shaded area? ($\pi=3.14$)



$\square$ cm

30. Find the height of a cylinder with a given surface area. ($\pi=3.14$)



Surface area : 471 cm^2

$\square$ cm

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

31. Buses bound for Toronto leave New York City every 9 minutes. Buses bound for Philadelphia leave every 15 minutes. The first buses leave for Toronto and Philadelphia at 8 A.M. Write the time when the two buses leave the terminal together for the second time. (Write down the minute only.)

_____

32. Fiona has $\frac{5}{6}\mathrm{m}$ of colored ribbon. She used $\frac{8}{15}\mathrm{m}$ of it to wrap a present. How long is the ribbon that she has left in m? (Write down the sum of denominator and numerator of mixed number. For example, if the answer is $4\frac{2}{3}$, then write as $3+2=5$.)

_____

33. Wilson read $\frac{2}{3}$ of a novel in 3 days. He read $\frac{1}{4}$ of the novel on the first day, and $\frac{1}{6}$ of the novel on the second day. How much did he read on the third day? (Write down the sum of denominator and numerator of mixed number. For example, if the answer is $4\frac{2}{3}$, write down as $3+2=5$.)

_____

34. Patrick's class is doing a group project. It takes $\frac{5}{7}$ of a cup of paint to cover 1m^2 of paper. How much paint is needed for $\frac{3}{8}\text{m}^2$ of paper? (Write down the sum of denominator and numerator of mixed number. For example, if the answer is $4\frac{2}{3}$, write down as $3+2=5$.)

_____

35. Jody's class collected $7\frac{6}{7}\text{kg}$ of canned goods for the food bank. They divided the food into 5 burlap sacks. How much food is in each sack? (Write down the sum of denominator and numerator of mixed number. For example, if the answer is $4\frac{2}{3}$, write down as $3+2=5$.)

_____

36. In a baseball game, Harold had 7 "at bats". He got 4 hits and 3 strikeouts. Find the ratio of the number of hits to the number of "at bats" as a fraction. (Write down the sum of denominator and numerator of mixed number. For example, if the answer is $4\frac{2}{3}$, write down as $3+2=5$.)

_____

37. In a math contest, 70 students answered the fraction question correctly. These students represent 35% of the total number of contestants. 15% students of the total number of contestants answered the decimal question correctly. What is the total number of contestants?

_____ contestants

38. Three envelopes were wet and thrown away and the rest were shared among 7 people so that each person had 9 envelopes. How many envelopes were there in the beginning?

_____ envelopes

39. Jessica wants to make a cone-shaped birthday hat. She has drawn a sector with a radius of 20cm and a central angel of 72°. What will the base radius be?

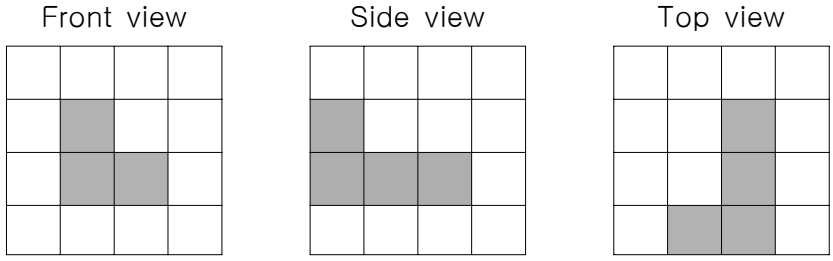
_____ cm

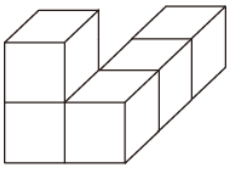
40. Suppose we have a rectangular sheet of paper with dimensions of 20cm by 12cm. Let's cut the paper into the largest possible equally-sized square pieces. Find how many of these squares can be made.

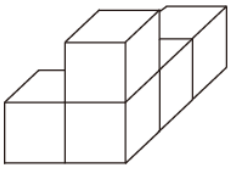
_____

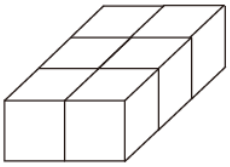
41. The front, side, and top views of a block are given. Find the correct block.

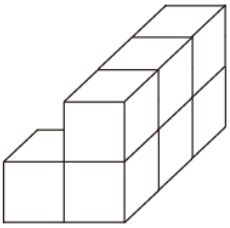
[2.3 points]



① 

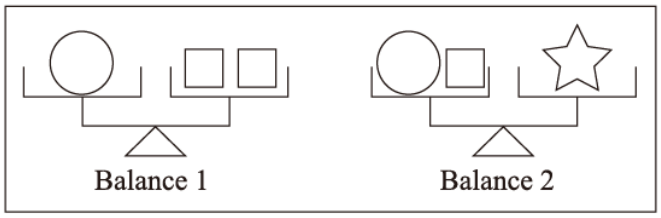
② 

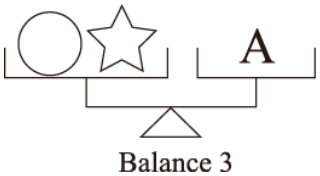
③ 

④ 

Answer : _____

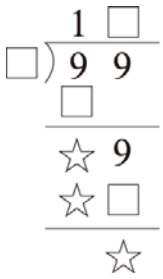
42. The two balances are level. How many □'s should be on 'A' of Balance 3 to keep it level? [2.3 points]





Answer : _____

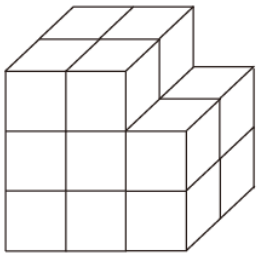
43. The □ and ☆ represent two different numbers in division below. Find the 2-digit number □☆. [3.3 points]



Answer : _____

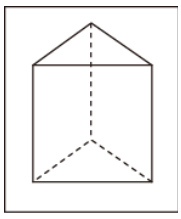
44. A wooden block is painted, including the bottom. Then it is cut into pieces by the lines shown as below. How many pieces would have 3 painted faces?

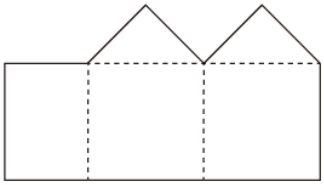
[3.3 points]

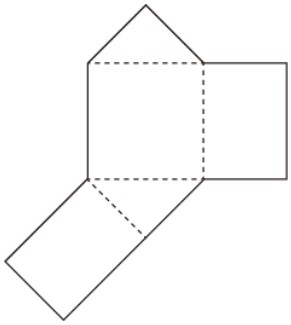


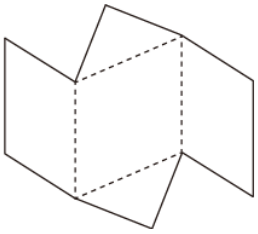
Answer : _____ pieces

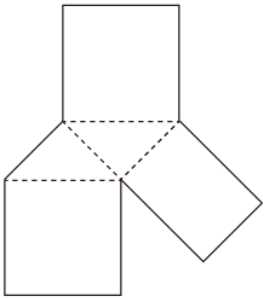
45. Find the net that folds to make the given triangle prism. [3.3 points]



① 

② 

③ 

④ 

Answer : _____

46. Look at the following statements. How many number that satisfy all the statements? [3.3 points]

1. The number is a natural number less than 53
2. The number is a natural number greater than 24
3. The number becomes an even number when 3 is added.

Answer : _____ numbers

47. Look at the number pattern. Find the correct number in the blank space ☐.

[4.3 points]

x	1	2	3	4	5
y	3	5	8		17

Answer : _____

48. How many 3-digit even numbers can be made using the following number cards? Each card can only be used once. [4.3 points]

0	4	4	7

Answer : _____ 3-digit even number

49. The ratio of the length and width of the base of a retangular prism is $4:3$ and the ratio of the width and the height of the prism is $4:5$. Express in the simplest natural form and add all three numbers. (For example, if the ratio is $7:1:3$, then write as $7+1+3=11$.) [4.3 points]

Answer : _____

50. The ☆, ○, △, and □ each represents a different unknown number. Each row and column will add up to the number at the right or bottom. What is the value of 'A'? [4.3 points]

☆	△	□	○	34
○	△	△	△	
△	□	□	△	
○	☆	☆	☆	38
	37	31	A	

Answer : _____