

※ You will receive 1.5 points for each correct answer for problems 1 to 30.

1. Calculate the answer.

$$3\frac{1}{6} + 2\frac{11}{12}$$

- Ⓐ $6\frac{1}{3}$
- Ⓑ $6\frac{1}{4}$
- Ⓒ $6\frac{1}{6}$
- Ⓓ $6\frac{1}{8}$
- Ⓔ $6\frac{1}{12}$

2. Calculate the answer.

$$8\frac{3}{8} - 3\frac{13}{20}$$

- Ⓐ $4\frac{27}{40}$
- Ⓑ $4\frac{29}{40}$
- Ⓒ $4\frac{31}{40}$
- Ⓓ $5\frac{27}{40}$
- Ⓔ $5\frac{29}{40}$

3. Calculate the answer.

$$1\frac{5}{7} \times 3\frac{7}{8}$$

- Ⓐ $3\frac{9}{14}$
- Ⓑ $3\frac{5}{7}$
- Ⓒ $6\frac{9}{14}$
- Ⓓ $6\frac{5}{7}$
- Ⓔ $6\frac{11}{14}$

4. Calculate the answer.

$$0.54 \times 9\frac{1}{6}$$

- Ⓐ $4\frac{9}{10}$
- Ⓑ $4\frac{19}{20}$
- Ⓒ $5\frac{1}{20}$
- Ⓓ $5\frac{1}{10}$
- Ⓔ $5\frac{3}{20}$

5. Calculate the answer.

$$4\frac{4}{9} \div 2\frac{3}{11}$$

- Ⓐ $1\frac{41}{45}$
- Ⓑ $1\frac{14}{15}$
- Ⓒ $1\frac{43}{45}$
- Ⓓ $2\frac{14}{15}$
- Ⓔ $2\frac{43}{45}$

6. Calculate the answer.

$$2\frac{1}{7} \div 1\frac{2}{3} \times 4\frac{9}{10}$$

- Ⓐ $6\frac{3}{10}$
- Ⓑ $6\frac{2}{5}$
- Ⓒ $6\frac{3}{5}$
- Ⓓ $8\frac{3}{10}$
- Ⓔ $8\frac{1}{2}$

7. Calculate the answer.

$$3\frac{3}{4} \div 0.45 - 1\frac{1}{9}$$

- Ⓐ $7\frac{2}{9}$
- Ⓑ $7\frac{4}{9}$
- Ⓒ $7\frac{2}{3}$
- Ⓓ $8\frac{2}{9}$
- Ⓔ $8\frac{4}{9}$

8. Calculate the answer.

$$4\frac{1}{5} - \left(3 - \left(\frac{1}{4} + \frac{4}{5} \right) \div 7 \right)$$

- Ⓐ $\frac{4}{5}$
- Ⓑ $\frac{9}{10}$
- Ⓒ $1\frac{1}{4}$
- Ⓓ $1\frac{3}{10}$
- Ⓔ $1\frac{7}{20}$

9. Calculate the answer.

$$\begin{array}{r} 1.86 \\ \times \quad 3 \\ \hline \end{array}$$

- Ⓐ 5.18
- Ⓑ 5.58
- Ⓒ 5.98
- Ⓓ 6.28
- Ⓔ 6.68

10. Calculate the answer.

$$\begin{array}{r} 6.2 \\ \times \quad 2.6 \\ \hline \end{array}$$

- Ⓐ 15.72
- Ⓑ 15.82
- Ⓒ 15.92
- Ⓓ 16.12
- Ⓔ 16.82

11. Calculate the answer.

$$\begin{array}{r} 40.5 \\ \times \quad 6.7 \\ \hline \end{array}$$

- Ⓐ 267.15
- Ⓑ 269.45
- Ⓒ 271.35
- Ⓓ 274.05
- Ⓔ 277.65

12. Calculate the answer.

$$\begin{array}{r} 4.38 \\ \times \quad 0.73 \\ \hline \end{array}$$

- Ⓐ 2.5094
- Ⓑ 2.7604
- Ⓒ 2.9624
- Ⓓ 3.1974
- Ⓔ 3.5214

13. Calculate the answer.

$$9 \overline{) 30.1}$$

- Ⓐ 3.31 0.07
- Ⓑ 3.34 0.04
- Ⓒ 3.37 0.05
- Ⓓ 3.41 0.02
- Ⓔ 3.42 0.01

14. Calculate the answer.

$$5.2 \overline{) 7.62}$$

- Ⓐ 1.46 0.028
- Ⓑ 1.44 0.032
- Ⓒ 1.42 0.022
- Ⓓ 1.41 0.008
- Ⓔ 1.38 0.016

15. Calculate the answer.

$$8.4 \overline{) 51.04}$$

- Ⓐ 6.06 0.048
- Ⓑ 6.06 0.052
- Ⓒ 6.06 0.074
- Ⓓ 6.07 0.048
- Ⓔ 6.07 0.052

16. Calculate the answer.

$$6.2 \overline{) 77.71}$$

- Ⓐ 12.53 0.024
- Ⓑ 12.52 0.058
- Ⓒ 12.51 0.021
- Ⓓ 12.5 0.036
- Ⓔ 12.49 0.041

17. Calculate the answer.

$$31.5 \overline{) 67.81}$$

- Ⓐ 2.13 0.065
- Ⓑ 2.14 0.011
- Ⓒ 2.15 0.085
- Ⓓ 2.16 0.297
- Ⓔ 2.17 0.031

18. Solve the equation.

$$(x \div 3) \times 8 = 48$$

- Ⓐ 18
- Ⓑ 19
- Ⓒ 20
- Ⓓ 21
- Ⓔ 22

19. Solve the equation.

$$7.2 - x + 1\frac{1}{2} = 12\frac{7}{10}$$

- Ⓐ 4
- Ⓑ 2
- Ⓒ -2
- Ⓓ -4
- Ⓔ -6

20. Solve the equation.

$$\left(x \times 2\frac{11}{20}\right) + 9.9 = 1\frac{2}{5}$$

- Ⓐ $2\frac{1}{3}$
- Ⓑ $3\frac{2}{3}$
- Ⓒ $-3\frac{1}{3}$
- Ⓓ $-4\frac{2}{3}$
- Ⓔ $-5\frac{1}{3}$

21. Solve the equation.

$$\left(x \times 4\frac{4}{5}\right) \div 1.6 = 9$$

- Ⓐ $1\frac{1}{2}$
- Ⓑ 2
- Ⓒ $2\frac{1}{2}$
- Ⓓ 3
- Ⓔ $3\frac{1}{2}$

22. Solve the equation.

$$1\frac{1}{4}x - 1\frac{1}{12} = \frac{5}{12}x - 4\frac{3}{4}$$

- Ⓐ $-4\frac{2}{5}$
- Ⓑ $-2\frac{3}{5}$
- Ⓒ $-\frac{1}{5}$
- Ⓓ $\frac{3}{5}$
- Ⓔ $2\frac{2}{5}$

23. Find the value of x .

$$x : \frac{3}{8} = 2\frac{1}{12} : 1\frac{9}{16}$$

- Ⓐ $\frac{1}{2}$
- Ⓑ $\frac{3}{4}$
- Ⓒ 1
- Ⓓ $1\frac{1}{2}$
- Ⓔ 2

24. Find the value of x .

$$5\frac{1}{7} : x = 3 : 8\frac{1}{6}$$

- Ⓐ 13
- Ⓑ 14
- Ⓒ 15
- Ⓓ 16
- Ⓔ 17

25. Find the value of x .

$$6\frac{2}{3} : 8 = 1\frac{1}{9} : x$$

- Ⓐ $\frac{1}{3}$
- Ⓑ $\frac{2}{3}$
- Ⓒ 1
- Ⓓ $1\frac{1}{3}$
- Ⓔ $1\frac{2}{3}$

26. Express the ratio in the simplest natural number form.

$$1.2 : 1\frac{7}{9} : \frac{8}{15}$$

- Ⓐ 24 : 20 : 15
- Ⓑ 24 : 40 : 15
- Ⓒ 27 : 20 : 12
- Ⓓ 27 : 30 : 16
- Ⓔ 27 : 40 : 12

27. Calculate the answer.

$$-3\frac{1}{10} + (7 - (3 + (6 - 3.1)))$$

- Ⓐ -2.5
- Ⓑ -2
- Ⓒ -1.5
- Ⓓ 1
- Ⓔ 1.5

28. Calculate the answer.

$$1.25 \div 3\frac{8}{9} \times \left(-4\frac{2}{3}\right) \div (-0.3)$$

- Ⓐ $3\frac{1}{2}$
- Ⓑ $3\frac{3}{4}$
- Ⓒ 4
- Ⓓ $4\frac{1}{4}$
- Ⓔ 5

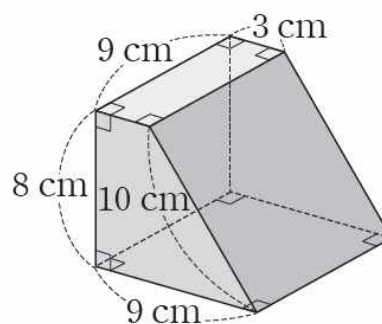
29. Find the value of a if the solutions to

$$\frac{2}{3}x + \frac{3}{4} = 1\frac{2}{3} + \frac{1}{4}x \text{ and}$$

$$\frac{a-x}{4} = \frac{15-3x}{7} \text{ are equal.}$$

- Ⓐ 6
- Ⓑ 7
- Ⓒ 8
- Ⓓ 9
- Ⓔ 10

30. Find the surface area.



- Ⓐ 362 cm^2
- Ⓑ 364 cm^2
- Ⓒ 366 cm^2
- Ⓓ 368 cm^2
- Ⓔ 370 cm^2

※ You will receive 2.0 points for each correct answer for problems 31 to 40.

- 31.** There is an airplane that travels 306km in $\frac{3}{7}$ hours. How many kilometers does this plane travel in 50 minutes?

_____ km

- 32.** There are two cuboids with the same base area but different heights. When these two cuboids were filled with the same amount of water, one cuboid was filled $\frac{2}{5}$ and the other $\frac{2}{3}$. If the height of the shorter cuboid is 105cm, what is the height of the taller cuboid?

_____ cm

- 33.** Parker has 16kg of meat. He is going to pack this meat in amounts of 0.24kg. How many grams of meat will be left after packing?

_____ g

- 34.** Lily's goal is to run a 42.195km marathon in $3\frac{3}{4}$ hours. How many kilometers per hour should she run if she maintains a constant speed? Write down only the decimal part of the answer. (For example, if the answer is 1.234km write down as 234.)

- 35.** Noah sold $\frac{7}{12}$ of the bananas he harvested on the farm and gave his friend $\frac{2}{5}$ of the bananas he had after the sale. If he has 54 bananas left over, how many bananas did he first harvest on the farm?

_____ bananas

- 36.** In a corn snack that weighs 68 grams, the corn makes up 67.6% of the snack. How many grams of corn are in the snack? Write down only the decimal part of the answer. (For example, if the answer is 1.234g write down as 234.)

- 37.** Robert and Irene have a certain number of stickers, and the ratio of the number of stickers Robert has to the number of stickers Irene has is $9 : 5$. If Robert has 28 more stickers than Irene, what is the total number of stickers that they have combined?

- 38.** There is a cylindrical can. The radius of this can is 5cm and the height is 12cm. What is the volume of this can? ($\pi = 3.14$)

_____ cm^3

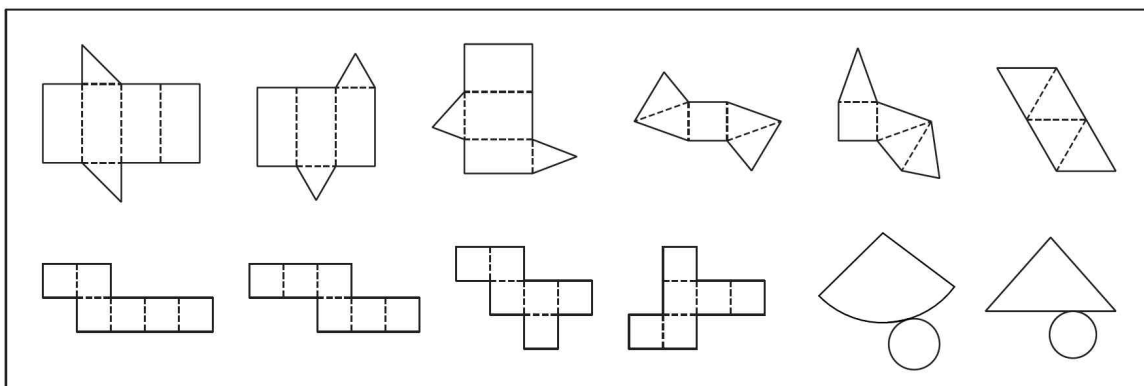
- 39.** There is a sector with a radius of 30cm. When the arc length of this sector is 39.25cm, what is the degree of the central angle of this sector? ($\pi = 3.14$)

_____°

- 40.** There is a rectangular prism with a length of 40cm, a width of 52cm, and a height of 28cm. When filling this rectangular prism with cubes of the same size, what is the least number of cubes that can be used to completely fill the prism?

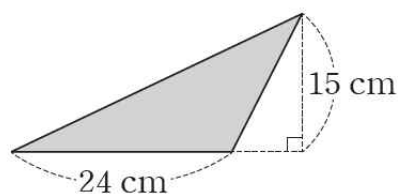
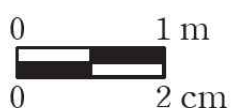
_____ cubes

41. When you fold the following nets, find the total number of nets that can make three-dimensional figures. [3.3 points]



Answer : _____

42. Find the actual area of the scale figure in square meters. [3.3 points]



Answer : _____ m^2

- 43.** The numbers below follow a certain pattern. Determine the pattern and use it to find the sum of the numerator and the denominator of the 11th fraction. [3.3 points]

$$\frac{1}{5}, \frac{4}{6}, \frac{7}{10}, \frac{10}{17}, \frac{13}{27}, \frac{16}{40}, \dots$$

Answer : _____

- 44.** A ball bounces up vertically $\frac{2}{3}$ as high as it was originally dropped. Benjamin caught the ball when it was 40cm, the maximum height after its third bounce. Find the distance the ball moved before he caught it. [3.3 points]

Answer : _____ cm

- 45.** Charles and Jennifer are on a stairway playing a game of rock, paper, scissors. The winner goes up 3 steps and the loser does not move, or if it's a draw, they both go up 1 step. They started at the bottom of the stairway, and Charles is now 46 steps up and Jennifer is now 31 steps up from where they started. Find the sum of the maximum and minimum values of the number of times they played rock, paper, scissors. [4.3 points]

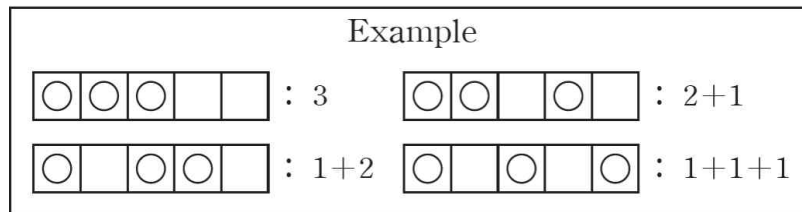
Answer : _____

- 46.** The sum of each row, column, and diagonal are all equal to A. Find the value of A. [4.3 points]

4		10
19		

Answer : _____

47. The example below shows a way to express numbers by putting 3 circles in 5 square blanks. In the example, four cases are shown: $3 = 2 + 1 = 1 + 2 = 1 + 1 + 1$. How many cases can express 7 by putting 7 circles in 9 square blanks? [4.3 points]



Answer : _____

48. Which of the following statements cannot be used to draw a triangle? [2.3 points]
- Ⓐ The longest side is 20cm and two angles are 45° and 60° .
 - Ⓑ Two sides are 5cm and 5cm, and the angle between the sides is 125° .
 - Ⓒ Three sides are 7cm, 5cm, and 13cm.
 - Ⓓ A right-angled triangle where the longest side is 12cm and one angle is 30° .

Answer : _____

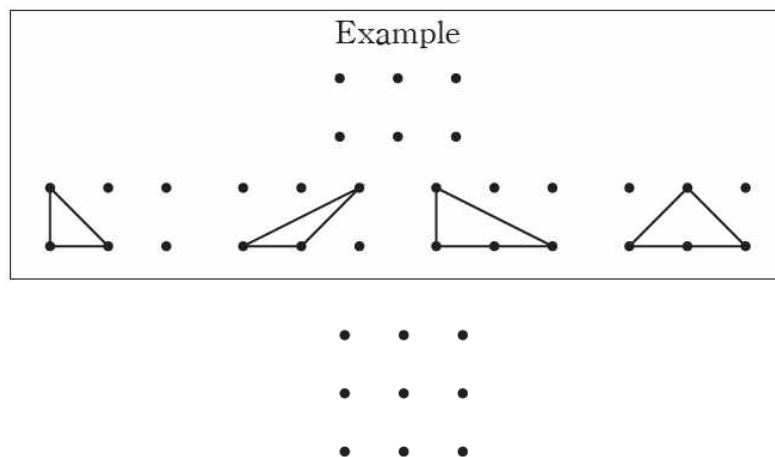
49. Bella, Eric, Linda, Mark, Harry, and Stella are sitting at equal intervals on a round table and having a meeting. Read the following statements and find who is sitting immediately to Bella's left. [2.3 points]

- Stella is sitting in the second seat to Bella's right.
- Linda and Mark are facing each other.
- Eric is sitting between Mark and Stella.

- Ⓐ Eric Ⓑ Linda Ⓒ Mark Ⓓ Harry

Answer : _____

50. The example below shows that there are four triangles with three vertices out of six points. In this situation, congruent triangles are considered the same. How many different triangles with three vertices out of the 9 points can be made? [4.3 points]



- Ⓐ 7 Ⓑ 8 Ⓒ 9 Ⓓ 10

Answer : _____