

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

1. Calculate the answer.

$$2\frac{7}{9} + 2\frac{11}{18}$$

- Ⓐ $5\frac{2}{9}$
- Ⓑ $5\frac{5}{18}$
- Ⓒ $5\frac{1}{3}$
- Ⓓ $5\frac{7}{18}$
- Ⓔ $5\frac{4}{9}$

2. Calculate the answer.

$$9\frac{7}{12} - 4\frac{5}{6}$$

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

3. Calculate the answer.

$$5\frac{4}{9} \times 2\frac{2}{7}$$

- Ⓐ $10\frac{1}{3}$
- Ⓑ $10\frac{4}{9}$
- Ⓒ $12\frac{2}{9}$
- Ⓓ $12\frac{1}{3}$
- Ⓔ $12\frac{4}{9}$

4. Calculate the answer.

$$0.72 \times 3\frac{1}{8}$$

- Ⓐ $2\frac{1}{8}$
- Ⓑ $2\frac{1}{4}$
- Ⓒ $2\frac{3}{8}$
- Ⓓ $3\frac{1}{2}$
- Ⓔ $3\frac{5}{8}$

5. Calculate the answer.

$$4\frac{3}{8} \div 3\frac{6}{13}$$

- Ⓐ $1\frac{19}{72}$
- Ⓑ $1\frac{7}{24}$
- Ⓒ $1\frac{13}{36}$
- Ⓓ $2\frac{2}{9}$
- Ⓔ $2\frac{5}{18}$

6. Calculate the answer.

$$5\frac{5}{6} \div 5\frac{1}{4} \times 3\frac{1}{3}$$

- Ⓐ $2\frac{2}{3}$
- Ⓑ $2\frac{20}{27}$
- Ⓒ $3\frac{17}{27}$
- Ⓓ $3\frac{19}{27}$
- Ⓔ $3\frac{7}{9}$

7. Calculate the answer.

$$3\frac{3}{8} \div 1.25 - 1\frac{1}{10}$$

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

8. Calculate the answer.

$$4\frac{5}{9} - \left(4 - \left(\frac{5}{9} + \frac{5}{6} \right) \div \frac{5}{6} \right)$$

- Ⓐ $1\frac{1}{9}$
- Ⓑ $1\frac{1}{6}$
- Ⓒ $2\frac{1}{9}$
- Ⓓ $2\frac{1}{6}$
- Ⓔ $2\frac{2}{9}$

9. Calculate the answer.

$$\begin{array}{r} 2.73 \\ \times 4 \\ \hline \end{array}$$

- Ⓐ 10.12
- Ⓑ 10.52
- Ⓒ 10.92
- Ⓓ 11.42
- Ⓔ 11.82

10. Calculate the answer.

$$\begin{array}{r} 3.8 \\ \times 5.3 \\ \hline \end{array}$$

- Ⓐ 19.84
- Ⓑ 19.94
- Ⓒ 20.04
- Ⓓ 20.14
- Ⓔ 20.24

11. Calculate the answer.

$$\begin{array}{r} 33.7 \\ \times 3.4 \\ \hline \end{array}$$

- Ⓐ 114.58
- Ⓑ 114.78
- Ⓒ 114.98
- Ⓓ 115.28
- Ⓔ 115.48

12. Calculate the answer.

$$\begin{array}{r} 1.54 \\ \times 0.86 \\ \hline \end{array}$$

- Ⓐ 1.1904
- Ⓑ 1.2644
- Ⓒ 1.3244
- Ⓓ 1.4264
- Ⓔ 1.5284

13. Calculate the answer.

$$7 \overline{) 50.5}$$

- Ⓐ 7.20 0.04
- Ⓑ 7.21 0.03
- Ⓒ 7.22 0.05
- Ⓓ 7.31 0.03
- Ⓔ 7.32 0.05

14. Calculate the answer.

$$3.3 \overline{) 6.26}$$

- Ⓐ 1.89 0.023
- Ⓑ 1.90 0.022
- Ⓒ 1.91 0.031
- Ⓓ 1.92 0.003
- Ⓔ 1.93 0.027

15. Calculate the answer.

$$7.2 \overline{) 34.15}$$

- Ⓐ 4.66 0.071
- Ⓑ 4.68 0.034
- Ⓒ 4.70 0.046
- Ⓓ 4.72 0.054
- Ⓔ 4.74 0.022

16. Calculate the answer.

$$8.4 \overline{) 90.87}$$

- Ⓐ 10.57 0.048
- Ⓑ 10.68 0.072
- Ⓒ 10.79 0.028
- Ⓓ 10.81 0.066
- Ⓔ 10.93 0.014

17. Calculate the answer.

$$41.4 \overline{) 93.58}$$

- Ⓐ 2.11 0.024
- Ⓑ 2.14 0.084
- Ⓒ 2.18 0.072
- Ⓓ 2.22 0.054
- Ⓔ 2.26 0.016

18. Solve the equation.

$$(x \div 4) \times 9 = 54$$

- Ⓐ 20
- Ⓑ 22
- Ⓒ 24
- Ⓓ 26
- Ⓔ 28

19. Solve the equation.

$$3.3 - x - 1\frac{1}{2} = 3\frac{4}{5}$$

- Ⓐ -4
- Ⓑ -2
- Ⓒ -1
- Ⓓ 1
- Ⓔ 2

20. Solve the equation.

$$\left(x \div 2\frac{1}{2}\right) - 4.5 = 1\frac{1}{4}$$

- Ⓐ $14\frac{3}{8}$
- Ⓑ $15\frac{3}{4}$
- Ⓒ $16\frac{1}{8}$
- Ⓓ $-14\frac{1}{4}$
- Ⓔ $-15\frac{5}{8}$

21. Solve the equation.

$$\left(x \times 4\frac{1}{6}\right) \div 1.5 = 25$$

- Ⓐ 5
- Ⓑ 6
- Ⓒ 7
- Ⓓ 8
- Ⓔ 9

22. Solve the equation.

$$4\frac{5}{18}x - 3\frac{2}{9} = \frac{11}{18}x + 2\frac{8}{9}$$

- Ⓐ $-2\frac{1}{9}$
- Ⓑ $-1\frac{1}{3}$
- Ⓒ $\frac{5}{6}$
- Ⓓ $1\frac{2}{3}$
- Ⓔ $2\frac{4}{9}$

23. Find the value of x .

$$x : 4\frac{1}{6} = 3\frac{3}{5} : 3$$

- Ⓐ 4
- Ⓑ $4\frac{1}{2}$
- Ⓒ 5
- Ⓓ $5\frac{1}{2}$
- Ⓔ 6

24. Find the value of x .

$$5\frac{5}{8} : x = 5 : 6\frac{2}{9}$$

- Ⓐ 4
- Ⓑ 7
- Ⓒ 10
- Ⓓ 13
- Ⓔ 16

25. Find the value of x .

$$1\frac{19}{21} : 4 = 3\frac{3}{7} : x$$

- Ⓐ $7\frac{1}{5}$
- Ⓑ $7\frac{3}{5}$
- Ⓒ 8
- Ⓓ $8\frac{1}{5}$
- Ⓔ $8\frac{3}{5}$

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

$$2.1 : 4\frac{2}{3} : 2\frac{9}{20}$$

- Ⓐ 16 : 32 : 21
- Ⓑ 16 : 40 : 19
- Ⓒ 18 : 32 : 21
- Ⓓ 18 : 40 : 21
- Ⓔ 20 : 36 : 19

27. Calculate the answer.

$$-4\frac{1}{5} + (6 - (2 + (7 - 4.2)))$$

- Ⓐ -3
- Ⓑ -2
- Ⓒ -1
- Ⓓ 2
- Ⓔ 3

28. Calculate the answer.

$$3.75 \div 2\frac{4}{7} \times \left(-3\frac{3}{5}\right) \div 8.4$$

- Ⓐ $-\frac{3}{8}$
- Ⓑ $-\frac{1}{2}$
- Ⓒ $-\frac{5}{8}$
- Ⓓ $-\frac{3}{4}$
- Ⓔ $-\frac{7}{8}$

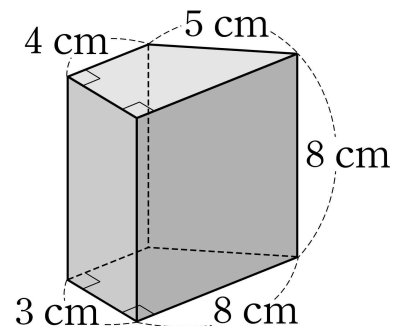
29. Find the value of a if the solutions to

$$\frac{2}{9}x + \frac{5}{6} = \frac{1}{6}x + 1\frac{1}{9} \text{ and}$$

$$\frac{a-x}{5} = \frac{x+2}{7} \text{ are equal.}$$

- Ⓐ 6
- Ⓑ 7
- Ⓒ 8
- Ⓓ 9
- Ⓔ 10

30. Find the surface area.



- Ⓐ 184 cm^2
- Ⓑ 188 cm^2
- Ⓒ 192 cm^2
- Ⓓ 196 cm^2
- Ⓔ 200 cm^2

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

31. Vance participated in a 5km race last year and this year. He ran for $31\frac{1}{5}$ minutes last year and $27\frac{7}{12}$ minutes this year. How many seconds shorter was this year from last year?

_____ seconds

32. There is a machine that uses 270mL of fuel per hour. How many milliliters of fuel does the machine need to run for 2 hours 12 minutes?

_____ mL

33. 300g of garlic was used by Xavier to make 21.25kg of kimchi. How many grams of garlic are needed for him to make 51kg of kimchi?

_____ g

34. Whitney painted $2\frac{1}{4}\text{m}^2$ of a wall with $\frac{3}{5}\text{L}$ of paint. How many liters of paint does she need to paint 150m^2 of the wall?

_____ L

- 35.** Zuly deposited \$400 for one year in a bank that pays 6.5% interest annually. What is the sum of the principal and the interest Zuly will receive after one year has passed?

\$ _____

- 36.** The pieces of candy that Alex had was distributed to Bella and Connor in a ratio of 4:3. If Bella received 3 more pieces of candy than Connor, how many pieces of candy did Alex have originally?

_____ pieces of candy

- 37.** The ratio of male to female students is 8:9. The ratio of students who wear glasses to those who do not is 2:7. Assuming that 72 male students wear glasses and this is 25% of all male students, how many female students wear glasses?

_____ female students wear glasses

- 38.** There is a cone with a sector radius of 15cm and base radius of 5cm. What is the surface area of this cone? ($\pi = 3.14$)

_____ cm^2

- 39.** There are 78 students who like baseball and 96 students who like soccer. Among them, 59 students like both sports. How many students in total like baseball or soccer?

_____ students

- 40.** If the sum of three consecutive odd numbers is 417, what is the smallest of these three odd numbers?

- 41.** Kayla went from her home to the museum. She travelled by bus for $\frac{2}{5}$ of the distance from the house to the museum, used the subway for $\frac{3}{4}$ of the remaining distance, and then walked the rest. If she walked 1.8km, how far is Kayla's house from the museum? [2.3 points]

Answer : _____ km

- 42.** Nadia dropped a ball vertically from the top of a building. The ball bounced up $\frac{1}{3}$ as high as it was originally dropped. After hitting the floor for the fourth time, it stopped moving. When the total travel distance travelled by the ball is 106m, what is the height of the building? [3.3 points]

Answer : _____ m

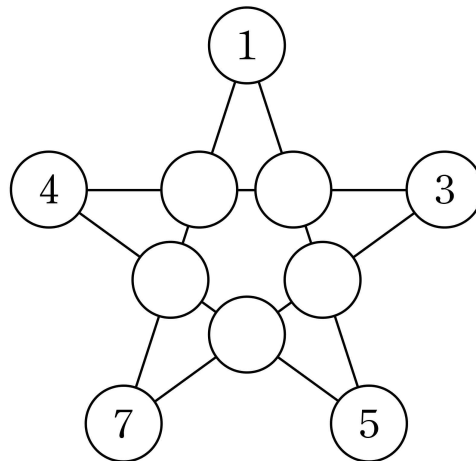
43. Two girls, Helena and Joy played rock, scissors, and paper 10 times. If a person won with rock, she went up the stairs 1 step; if a person won with scissors, she went up the stairs 2 steps; and if a person won with paper, she went up the stairs 3 steps. The following table shows when Helena played rock, scissors, and paper.

Helena	Joy
scissors	
paper	
paper	
paper	
scissors	
rock	
paper	
scissors	
paper	
paper	

If there were no games with a draw, how many steps did Joy take if Helena went up the stairs 4 more steps than Joy? [4.3 points]

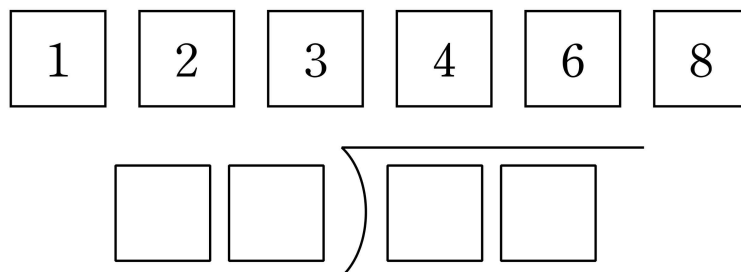
Answer : _____ steps

44. In the circles, ten different numbers are written from the numbers 1 to 12. If the sum of the four numbers written on each straight line is the same, find the sum of the five missing numbers. [4.3 points]



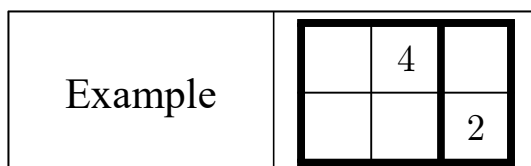
Answer : _____

45. Four of the following six numbers are used to complete the division problem which does not have any remainder. How many possible division problems can be made? [4.3 points]

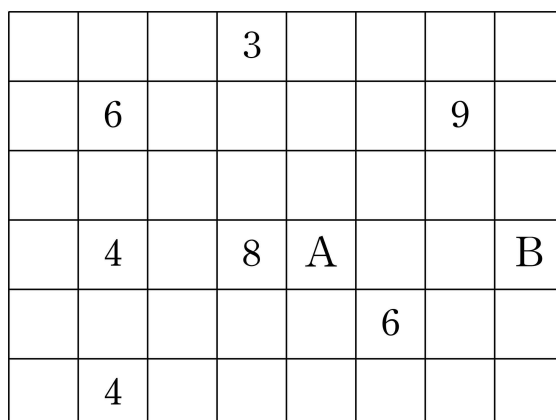


Answer : _____

46. The example below is a diagram of a rectangle with 6 squares divided into 2 rectangles. The number in each rectangle is the number of small squares.



Find the product of A and B when the rectangle with 48 squares is divided into 9 rectangles, as shown in the following figure. [3.3 points]



Answer : _____

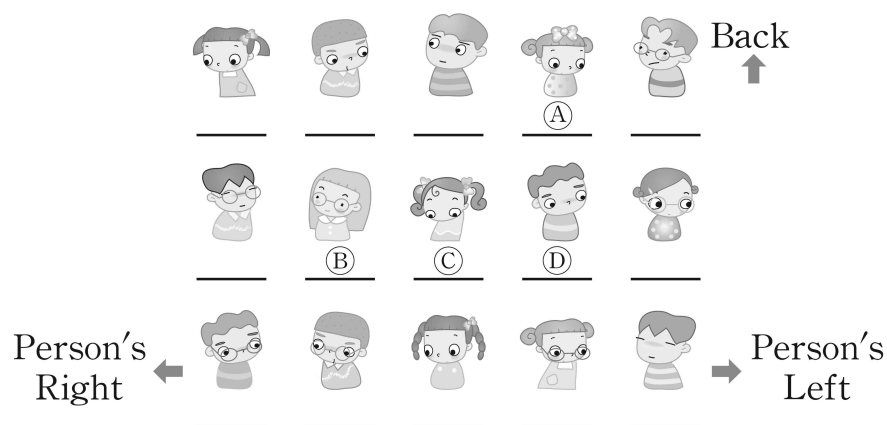
47. Chloe gave some of her marbles to Evan and Felix. Felix got four more marbles than Evan. Chloe gave Grace half of the remaining marbles, and Grace had five fewer marbles than Felix. If the sum of Chloe's remaining marbles and the number of marbles Evan received is 77, how many marbles did Chloe have at the beginning? [3.3 points]

Answer : _____ marbles

48. Read the following statements and answer the question.

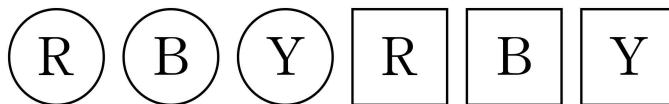
Owen is the third person to Alex's left.
 Alex is the second person behind Jamie.
 Daisy is the second person to Jamie's left.
 Morgan is the third person to Daisy's right.

If Taylor is just behind Daisy, where is Taylor's location? [2.3 points]



Answer : _____

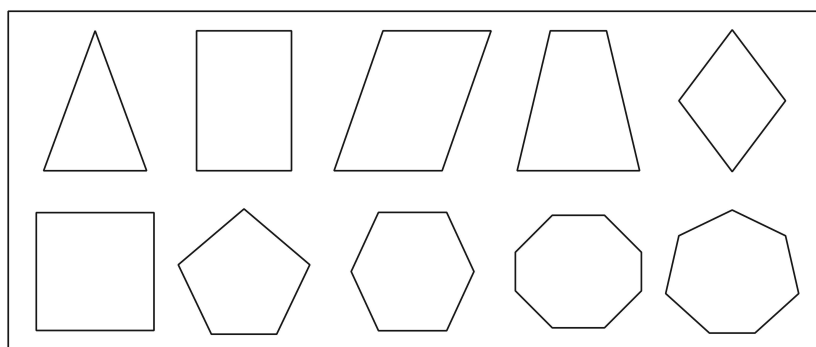
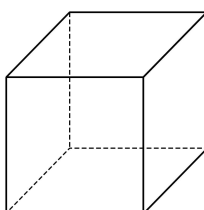
49. We want to line up red, blue, and yellow circles, and red, blue, and yellow squares. How many cases are possible if the same-colored figures are not adjacent to each other and the same-shaped figures are also not adjacent to each other? [3.3 points]



- Ⓐ 12 Ⓑ 15 Ⓒ 18 Ⓓ 21

Answer : _____

50. How many of the following shapes are a cross-section of the cube? [4.3 points]



- Ⓐ 7 Ⓑ 8 Ⓒ 9 Ⓓ 10

Answer : _____