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

1. Solve the fraction into its simplest form.

$$\frac{60}{84}$$

Ⓐ $\frac{4}{7}$

Ⓑ $\frac{5}{7}$

Ⓒ $\frac{6}{7}$

Ⓓ $\frac{5}{12}$

Ⓔ $\frac{7}{12}$

2. Solve the fraction into its simplest form.

$$\frac{57}{152}$$

Ⓐ $\frac{3}{8}$

Ⓑ $\frac{1}{3}$

Ⓒ $\frac{3}{10}$

Ⓓ $\frac{3}{11}$

Ⓔ $\frac{1}{4}$

3. Calculate the answer.

$$2\frac{1}{5} + 3\frac{2}{15}$$

Ⓐ $5\frac{1}{15}$

Ⓑ $5\frac{1}{5}$

Ⓒ $5\frac{1}{3}$

Ⓓ $6\frac{1}{5}$

Ⓔ $6\frac{1}{3}$

4. Calculate the answer.

$$4\frac{3}{8} + 1\frac{11}{12}$$

Ⓐ $5\frac{5}{24}$

Ⓑ $5\frac{7}{12}$

Ⓒ $6\frac{1}{4}$

Ⓓ $6\frac{7}{24}$

Ⓔ $6\frac{1}{3}$

5. Calculate the answer.

$$7\frac{5}{9} - 4\frac{13}{18}$$

Ⓐ $2\frac{2}{3}$

Ⓑ $2\frac{13}{18}$

Ⓒ $2\frac{5}{6}$

Ⓓ $3\frac{1}{9}$

Ⓔ $3\frac{1}{6}$

6. Calculate the answer.

$$6\frac{2}{9} - 3\frac{7}{15}$$

Ⓐ $2\frac{32}{45}$

Ⓑ $2\frac{11}{15}$

Ⓒ $2\frac{34}{45}$

Ⓓ $3\frac{19}{45}$

Ⓔ $3\frac{5}{9}$

7. Calculate the answer.

$$\frac{2}{3} + \left(\frac{5}{6} - \frac{3}{4}\right)$$

Ⓐ $\frac{1}{3}$

Ⓑ $\frac{3}{4}$

Ⓒ $\frac{5}{6}$

Ⓓ $1\frac{1}{4}$

Ⓔ $1\frac{2}{3}$

8. Calculate the answer.

$$4\frac{1}{4} - 2\frac{7}{10} + 1\frac{11}{12}$$

Ⓐ $2\frac{7}{15}$

Ⓑ $2\frac{8}{15}$

Ⓒ $3\frac{1}{3}$

Ⓓ $3\frac{2}{5}$

Ⓔ $3\frac{7}{15}$

9. Calculate the answer.

$$3\frac{1}{5} \times 1\frac{5}{12}$$

Ⓐ $4\frac{8}{15}$

Ⓑ $4\frac{7}{9}$

Ⓒ $4\frac{5}{6}$

Ⓓ $3\frac{11}{18}$

Ⓔ $3\frac{2}{5}$

10. Calculate the answer.

$$0.72 \times 4\frac{4}{9}$$

Ⓐ $2\frac{5}{9}$

Ⓑ $2\frac{3}{5}$

Ⓒ $2\frac{4}{5}$

Ⓓ $3\frac{1}{5}$

Ⓔ $3\frac{2}{9}$

11. Calculate the answer.

$$1\frac{1}{9} \times \frac{8}{15} \times 5\frac{1}{4}$$

Ⓐ $3\frac{1}{6}$

Ⓑ $3\frac{1}{9}$

Ⓒ $3\frac{1}{15}$

Ⓓ $5\frac{1}{3}$

Ⓔ $5\frac{1}{5}$

12. Calculate the answer.

$$0.98 \times \frac{5}{8} \times \frac{6}{7}$$

Ⓐ $\frac{9}{20}$

Ⓑ $\frac{19}{40}$

Ⓒ $\frac{1}{2}$

Ⓓ $\frac{21}{40}$

Ⓔ $\frac{11}{20}$

13. Calculate the answer.

$$2\frac{4}{9} \div \frac{11}{21}$$

Ⓐ $2\frac{1}{8}$

Ⓑ $2\frac{2}{9}$

Ⓒ $4\frac{1}{9}$

Ⓓ $4\frac{1}{7}$

Ⓔ $4\frac{2}{3}$

14. Calculate the answer.

$$5.1 \div 2\frac{5}{6}$$

Ⓐ $1\frac{3}{5}$

Ⓑ $1\frac{4}{5}$

Ⓒ 2

Ⓓ $2\frac{1}{5}$

Ⓔ $2\frac{2}{5}$

15. Calculate the answer.

$$4\frac{2}{7} \div 1\frac{7}{8}$$

Ⓐ $3\frac{1}{9}$

Ⓑ $3\frac{1}{12}$

Ⓒ $2\frac{2}{7}$

Ⓓ $2\frac{3}{14}$

Ⓔ $2\frac{1}{7}$

16. Calculate the answer.

$$1\frac{9}{11} \div 2\frac{1}{4} \div \frac{5}{12}$$

Ⓐ $1\frac{10}{11}$

Ⓑ $1\frac{31}{33}$

Ⓒ $1\frac{32}{33}$

Ⓓ $2\frac{10}{11}$

Ⓔ $2\frac{31}{33}$

17. Calculate the answer.

$$2\frac{2}{9} \div 1.5 \times 1\frac{5}{16}$$

Ⓐ $1\frac{7}{9}$

Ⓑ $1\frac{5}{6}$

Ⓒ $1\frac{8}{9}$

Ⓓ $1\frac{17}{18}$

Ⓔ $1\frac{19}{20}$

18. Calculate the answer.

$$3\frac{8}{9} \times 1\frac{1}{14} \div 3\frac{1}{8}$$

Ⓐ $1\frac{1}{4}$

Ⓑ $1\frac{1}{3}$

Ⓒ $1\frac{4}{7}$

Ⓓ $2\frac{1}{5}$

Ⓔ $2\frac{3}{4}$

19. Calculate the answer.

$$\left(1\frac{1}{16} - \frac{3}{4}\right) \times 8\frac{1}{6} \div 2\frac{11}{12}$$

Ⓐ $\frac{3}{8}$

Ⓑ $\frac{1}{2}$

Ⓒ $\frac{5}{8}$

Ⓓ $\frac{3}{4}$

Ⓔ $\frac{7}{8}$

20. Calculate the answer.

$$\begin{array}{r} 2.64 \\ \times\quad 14 \\ \hline \end{array}$$

Ⓐ 34.76

Ⓑ 35.36

Ⓒ 36.96

Ⓓ 37.56

Ⓔ 38.06

21. Calculate the answer.

$$\begin{array}{r} 4.8 \\ \times\ 5.3 \\ \hline \end{array}$$

Ⓐ 24.54
Ⓑ 24.74
Ⓒ 25.44
Ⓓ 25.64
Ⓔ 25.84

22. Calculate the answer.

$$\begin{array}{r} 6.7 \\ \times\ 0.39 \\ \hline \end{array}$$

Ⓐ 2.613
Ⓑ 2.653
Ⓒ 2.693
Ⓓ 2.723
Ⓔ 2.763

23. Calculate the answer.

$$5.3\overline{)\,4.53}$$

Ⓐ 0.84 …… 0.013
Ⓑ 0.84 …… 0.035
Ⓒ 0.85 …… 0.003
Ⓓ 0.85 …… 0.025
Ⓔ 0.86 …… 0.042

24. Calculate the answer.

$$8.7\overline{)\,78.01}$$

Ⓐ 8.96 …… 0.058
Ⓑ 8.96 …… 0.073
Ⓒ 8.96 …… 0.081
Ⓓ 8.97 …… 0.018
Ⓔ 8.97 …… 0.032

25. Solve the equation.

$$\left(x \div \frac{9}{25}\right) \times \frac{3}{8} = 3\frac{1}{3}$$

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

26. Find the value of x.

$$2.2 : 5\frac{1}{2} = 1\frac{5}{9} : x$$

Ⓐ 4

Ⓑ $3\frac{8}{9}$

Ⓒ $3\frac{1}{3}$

Ⓓ 3

Ⓔ $2\frac{5}{6}$

27. Calculate the answer.

$$-12-(9+(3-7))-17$$

Ⓐ -34

Ⓑ -20

Ⓒ -6

Ⓓ 8

Ⓔ 22

28. Calculate the answer.

$$4\frac{1}{6} \div \left(-1\frac{3}{4}\right) \times 4.2 \div (-6) \times \left(-5\frac{2}{5}\right)$$

Ⓐ -12

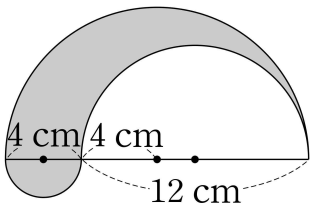
Ⓑ -9

Ⓒ -6

Ⓓ 9

Ⓔ 12

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



Ⓐ 49.74 cm

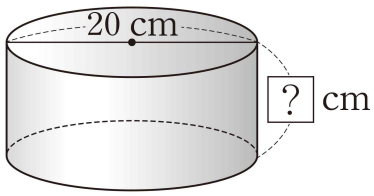
Ⓑ 49.92 cm

Ⓒ 50.24 cm

Ⓓ 50.42 cm

Ⓔ 50.64 cm

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



(Surface area) $= 1193.2$ cm^2

Ⓐ 5 cm

Ⓑ 6 cm

Ⓒ 7 cm

Ⓓ 8 cm

Ⓔ 9 cm

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

31. Obelia ran 25.789km of a 42.195km marathon. How many more kilometers does she have to run to finish the race? Write down only the decimal part of the answer (for example, if the answer is 1.234km write down as 234).

_____

32. Phillip took 21 minutes to assemble five robots, and Quincey took 8 minutes to assemble three robots. What is the time difference between Phillip and Quincey for assembling one robot each? If the answer is $A\frac{C}{B}$ minutes, write the sum $A+B+C$. (Note that $\frac{C}{B}$ is the simplest fraction.)

_____

33. Silvia plans to evenly divide $5\frac{3}{40}$L of milk among the seven days of the week. How many milliliters of milk should she drink per day?

_____ mL

34. $250\frac{1}{2}$g of apples is needed to make 180mL of apple juice. How many grams of apples is needed to make 0.12L of apple juice?

_____ g

35. A $12\frac{5}{6}$m board weighs $7\frac{1}{3}$kg. What is the weight of 1m of the board? If the answer is $\frac{B}{A}$kg, write the sum $A+B$. (Note that $\frac{B}{A}$ is the simplest fraction.)

_____

36. There is a 61-story building that is 251.32m tall. If all the floors of this building are the same height, what is the height of each floor? Write down only the decimal part of the answer (for example, if the answer is 1.23m write down as 23).

_____

37. A ramen company has launched a new ramen. The new ramen has a 20% weight increase compared to the existing ramen. If the weight of the new ramen is 210g, what is the weight of the existing ramen?

_____ g

38. Timothy harvested 55kg of potatoes from his farm over yesterday and today combined. The amount of potatoes Timothy harvested today was 5kg less than three times that of yesterday. How many kilograms of potatoes did he harvest yesterday?

_____ kg

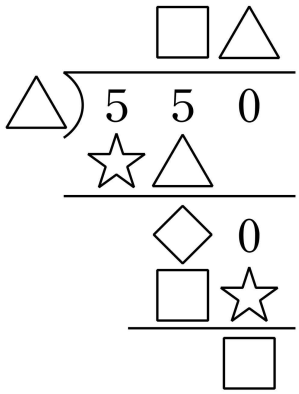
39. There is a rectangular prism. The length of the base of the prism is 5cm, the width is 4cm, and the volume is 120cm^3. What is the surface area of this rectangular prism?

_____ cm^2

40. Uriella watched a movie from $1:00$ p.m. to $3:36$ p.m. What is the angle which the clock's hour hand moved while she was watching the movie?

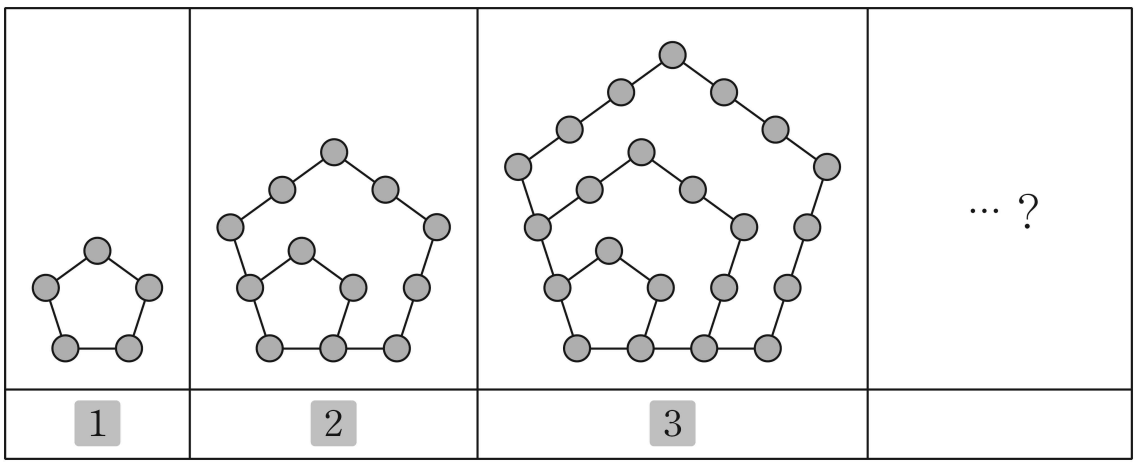
_____ °

41. The four figures □, △, ☆, ◇ represent different numbers. Find the values of □+△+☆+◇. [2.3 points]



Answer : _____

42. The picture below follows an increasing pattern and the figure numbers indicate the order. How many dots(●) would there be in the 7th figure? [3.3 points]



Answer : _____ dots

43. Sixteen teams will play in a league with four groups of four teams. In a league, teams play against each other within their group. Each team will play one game with every other team in the group.

After all group matches are completed, the first and second-ranked teams in each group will then advance to a knockout tournament. In a knockout tournament, teams play against each other, and the losing team is eliminated from the competition. This continues until only one team remains as the winner.

How many games will be played in total? [4.3 points]

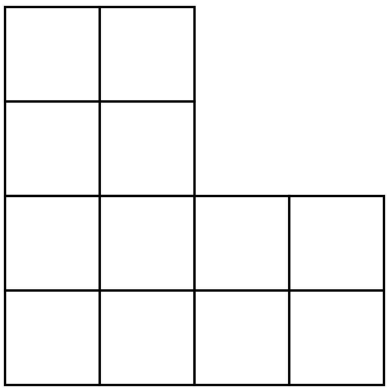
Answer : _____ games

44. Find how many times the numeral 1 is used to write the numbers 1 through 200. [4.3 points]

Answer : _____ times

45. What is the total number of rectangles (including squares) you can find in the figure below?

[4.3 points]



Answer : _____

46. Use each $+$, $\times$, and $\div$ once to fill in each $\square$ in order to find the maximum possible value of the resulting equation. Your answer is the maximum possible value. [3.3 points]

$$4 \square 2 \square 9 \square 3$$

Answer : _____

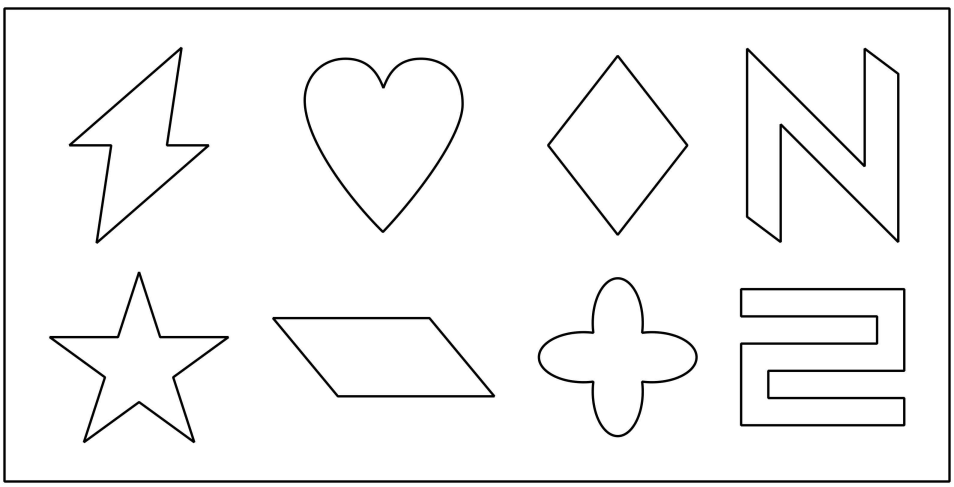
47. Look at the following conditions.

[Condition 1] When the number is divided by 7, the remainder is an odd number. [Condition 2] The tens place value is 3 times the ones place value.

Find the double digit number that satisfies Conditions 1 and 2. [3.3 points]

Answer : _____

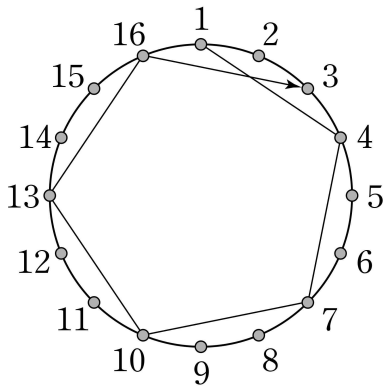
48. How many of the following figures are point-symmetrical? [2.3 points]



Ⓐ 4 Ⓑ 5 Ⓒ 6 Ⓓ 7

Answer : _____

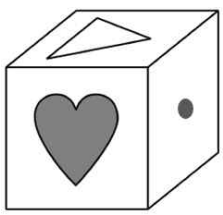
49. The circle has the numerals 1 to 16 arranged in order along the circumference. Connect every other numeral with an →, beginning from 1 and skipping to 4 as indicated. What numeral is reached after the 15^{th} skip? [3.3 points]

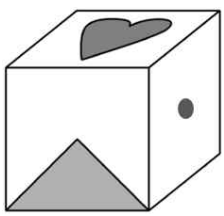


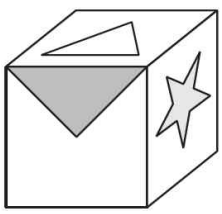
Ⓐ 13 Ⓑ 14 Ⓒ 15 Ⓓ 16

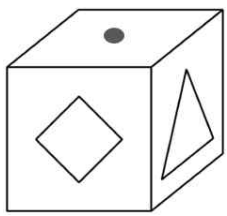
Answer : _____

50. The following images show various faces of a cube. Choose the cube that is different from the others. [4.3 points]

Ⓐ 

Ⓑ 

Ⓒ 

Ⓓ 

Answer : _____