

関東学院中学校

2009

$$\begin{aligned}
 1. \quad (1) \quad & 10 \div \left\{ \frac{13}{16} - (0.75 - \frac{1}{6}) \times \frac{3}{14} \right\} \\
 & = 10 \div \left(\frac{13}{16} - \frac{1}{12} \times \frac{17}{14} \right) \\
 & = 10 \div \left(\frac{13}{16} - \frac{17}{24} \right) \\
 & = 10 \div \frac{5}{48} = 10 \times \frac{48}{5} = \underline{\underline{96}}
 \end{aligned}$$

$$\begin{aligned}
 & 0.75 - \frac{1}{6} \\
 & = \frac{3}{4} - \frac{1}{6} = \frac{9}{12} - \frac{2}{12} = \frac{7}{12} \\
 & \frac{13}{16} - \frac{17}{24} = \frac{39}{48} - \frac{34}{48} = \frac{5}{48}
 \end{aligned}$$

$$(2) \quad 1 \div \left(1 + \frac{2}{3 + \square} \right) = \frac{5}{6}$$

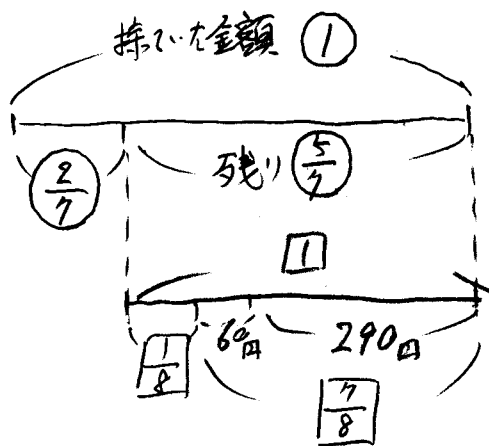
$$\left(\quad \right) = 1 \div \frac{5}{6} = \frac{6}{5}$$

$$\frac{2}{3 + \square} = \frac{6}{5} - 1 = \frac{1}{5} \overset{\times 2}{=} \frac{2}{10} \underset{\times 2}{}$$

$$3 + \square = 10$$

$$\square = 10 - 3 = \underline{\underline{7}}$$

2.



$$\square \times \frac{7}{8} = 60 + 290 = 350$$

$$\square = 350 \div \frac{7}{8} = 400 \text{円}$$

$$\textcircled{1} \times \frac{5}{7} = 400$$

$$\textcircled{1} = 400 \div \frac{5}{7}$$

$$= 560$$

A 560円

3.

$$A = \frac{\Delta}{O} \text{ とすると}$$

$$\frac{\Delta}{O} \times 2\frac{4}{7} = \frac{\Delta}{O} \times \frac{18}{7} \rightarrow \Delta \text{ は } 7 \text{ の倍数}$$

$$\rightarrow O \text{ は } 18 \text{ の約数}$$

$$\frac{\Delta}{O} \div \frac{11}{12} = \frac{\Delta}{O} \times \frac{12}{11} \rightarrow \Delta \text{ は } 11 \text{ の倍数}$$

$$\rightarrow O \text{ は } 12 \text{ の約数}$$

$$\left. \begin{array}{l} \Delta \text{ は } 7 \text{ と } 11 \text{ の最小公倍数 } 77 \\ O \text{ は } 18 \text{ と } 12 \text{ の最大公約数 } 6 \end{array} \right\} \frac{77}{6} = 12\frac{5}{6}$$

$$\underline{A. 12\frac{5}{6}}$$

4. A : B (Aを使い切り場合)

$$5 : 3 = 9 : \square \quad \square = \frac{27}{5} = 5.4 \quad \dots \dots A \text{ の } 9 \text{ を使うには } B \text{ が } 5.4 \text{ 必要}$$

A : B (Bを使い切り場合)

$$5 : 3 = \square : 5 \quad \square = \frac{25}{3} = 8\frac{1}{3} \quad \dots \dots B \text{ が } 5 \text{ を使うのは } A \text{ が } 8\frac{1}{3} \text{ 必要}$$

$$9 - 8\frac{1}{3} = \frac{2}{3} \text{ 余り} \quad 56 \div \frac{2}{3} = 84 \dots \textcircled{1}$$

$$\textcircled{5} = 84 \times 5 = 420 \quad \dots \dots B \text{ は } 420 \text{ 個必要}$$

$$420 \div 3 = 140$$

↑
製品1個作るのにBは3個必要

$$\underline{A. 140 \text{ 個}}$$

5. $100 \text{ cm} \div 3 = \frac{100}{3} \text{ cm}$ $\dots \dots$ 正三角形に作る時のA, B, Cの差

$$\frac{100}{3} \div (10 - 6) = \frac{25}{3} = 8\frac{1}{3}$$

AとBは1秒で4cmの差

$$\underline{A. 8\frac{1}{3} \text{ 秒後}}$$

6. (1) 全体の量を1とすると大を4本で9分含む

$$\text{大1本で1分間} \quad 1 \div 4 \div 9 = \frac{1}{36} \text{ 入り}$$

$$\text{大3本で8分間} \quad \frac{1}{36} \times 3 \times 8 = \frac{2}{3} \text{ 入り}$$

残り $1 - \frac{2}{3} = \frac{1}{3}$ を小2本で8分含む

$$\text{小1本1分} \quad \frac{1}{3} \div 2 \div 8 = \frac{1}{48}$$

$$\text{よって} \quad 1 \div \frac{1}{48} = 48$$

A. 48分

$$(2) \quad 1 \div \left(\frac{1}{36} \times 10 + \frac{1}{48} \times 8 \right) = \frac{9}{4} \text{分} = 2\frac{1}{4} \text{分}$$

A. 2分15秒

$$(3) \quad \text{小6本6分で} \quad \frac{1}{48} \times 6 \times 6 = \frac{3}{4}$$

半分が入ってこなかったため $\frac{3}{4} - \frac{1}{2} = \frac{1}{4}$... 残った水

$$\frac{1}{4} \div 6 = \frac{1}{24} \text{ ... 1分} \frac{1}{24} \text{ ずつ水がもれ}$$

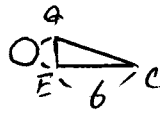
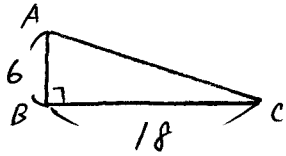
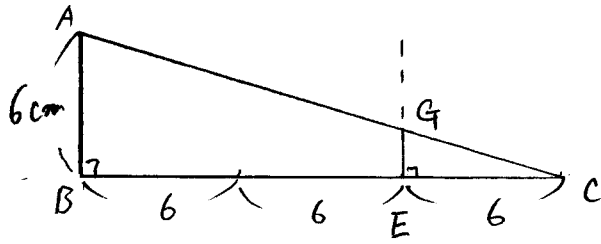
残り

$$\frac{1}{2} \div \left(\frac{1}{48} \times 6 + \frac{1}{36} - \frac{1}{24} \right) = \frac{9}{2} = 4\frac{1}{2} \text{分}$$

A. 4分30秒

7

(1) DはBCの三等分の点でDE=6cmなので



$$6 : 0 = 18 : 6$$

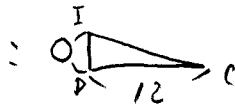
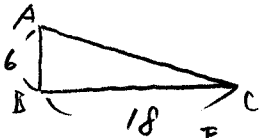
$$0 = 2$$

$$FG = 18 - 2 = 16$$

(FE) (GE)

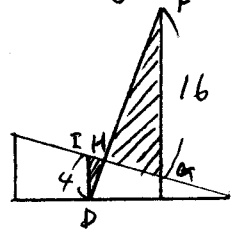
A. 16 cm

(2) DがBCと直角にひいた線とACの交点をIとする



$$6 : 0 = 18 : 12$$

$$0 = 4 \text{ cm}$$



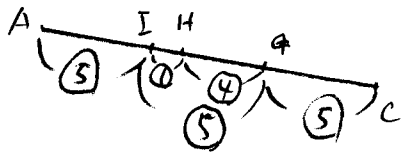
$$FG : DI = 16 : 4 = 4 : 1$$

斜線部の2つの三角形は相似の関係なので

$$FH : HD \text{ も } 4 : 1$$

A. 4 : 1

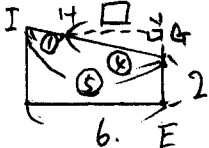
(3) (2)よりHG:IHも4:1 IHの長さを①とする



$$\text{とあるので } AH : HC = ⑥ : ⑨ = 2 : 3$$

A. 2 : 3

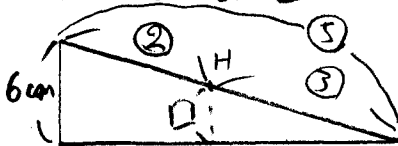
(4) (2)よりGEを底辺とした時Hの高さは



$$\square = 6 \text{ cm} \times \frac{④}{⑤} = \frac{24}{5} = 4.8 \text{ cm}$$

$$\left. \begin{array}{l} \text{三角形 HEG} \\ = 2 \times 4.8 \times \frac{1}{2} = 4.8 \text{ cm}^2 \end{array} \right\}$$

(3)よりBCを底辺とした時Hの高さは



$$\square = 6 \text{ cm} \times \frac{③}{⑤} = \frac{18}{5} = 3.6 \text{ cm}$$

$$\left. \begin{array}{l} \text{三角形 HDE} \\ = 6 \times 3.6 \times \frac{1}{2} = 10.8 \text{ cm}^2 \end{array} \right\}$$

$$\text{四角形 HDEG} = 4.8 + 10.8 = 15.6$$

A. 15.6 cm²