

湘南白百合学園中学校 2006

① (1) $2\frac{3}{8} - \{1\frac{4}{5} \times \frac{1}{3} - (0.3 - 0.5 \div 2\frac{1}{2})\} - 1.25$

$= 2\frac{3}{8} - \{\frac{8^3}{5} \times \frac{1}{3} - (\frac{3}{10} - \frac{1}{2} \times \frac{2}{5})\} - 1\frac{1}{4}$

$= 2\frac{3}{8} - (\frac{8^6}{5 \cdot 10} - \frac{1}{10}) - 1\frac{1}{4} = 2\frac{3}{8} - \frac{1}{2} - 1\frac{1}{4} = 1\frac{11}{8} - \frac{4}{8} - 1\frac{2}{8} = \frac{5}{8} \quad \underline{A. \frac{5}{8}}$

(2)

$\frac{1}{6} - (\square \times 3.75 - 0.375 \div \frac{3}{5}) \times \frac{1}{3} = \frac{1}{3} \quad \square \times \frac{15}{4} - \frac{5}{8} = \frac{5}{8}$

$\frac{1}{6} - (\square \times \frac{15}{4} - \frac{3}{8} \times \frac{5}{3}) \times \frac{4}{3} = \frac{1}{3} \quad \square \times \frac{15}{4} = \frac{5}{8} + \frac{5}{8} = \frac{10}{8}$

$(\quad) \times \frac{4}{3} = \frac{1}{6} - \frac{1}{3} = -\frac{1}{6} \quad \square = \frac{10}{8} \times \frac{4}{15} = \frac{5}{6}$

$(\quad) = \frac{5}{6} \times \frac{3}{4} = \frac{5}{8}$

A. $\frac{1}{3}$

(3)

赤 黄 青
1 - 3 - 8
4 - 6
6 - 4
8 - 3
積 24

赤 黄 青
2 - 2 - 6
3 - 4
4 - 3
6 - 2
積 12

赤 黄 青
3 - 1 - 8
2 - 4
4 - 2
8 - 1
積 8

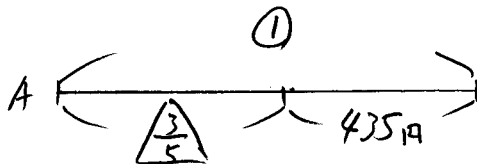
赤 黄 青
4 - 1 - 6
2 - 3
3 - 2
6 - 1
積 6

赤 黄 青
6 - 1 - 4
2 - 2
4 - 1
積 4

赤 黄 青
8 - 1 - 3
3 - 1
積 3

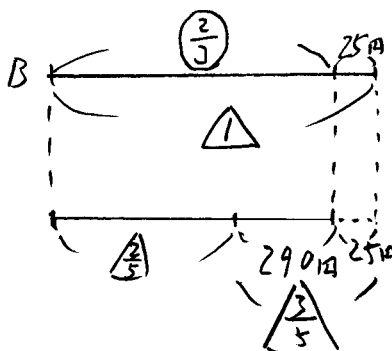
A. 21通り

(4)



$\frac{3}{5} \times \frac{2}{3} = \frac{2}{5}$

$\frac{435}{3} \times \frac{2}{3} = 290m$

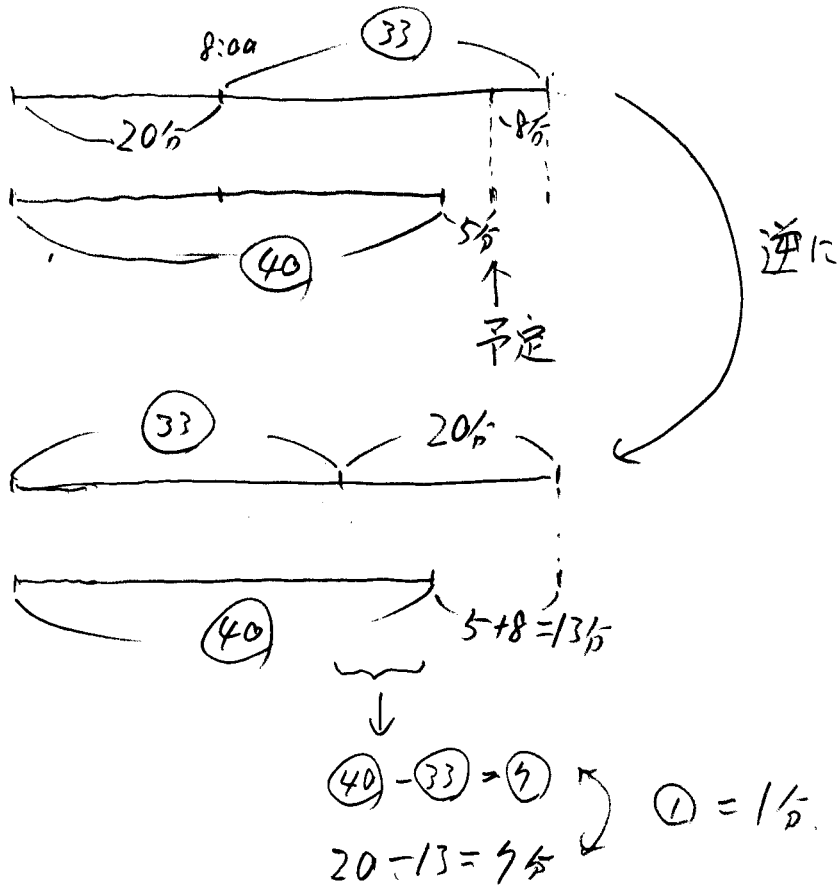


$290 + 25 = 315m \dots \frac{3}{5}$

$A = \frac{3}{5} + 435 = 315 + 435 = 750$

A 750m

② 速さの比 $80:66 = 40:33$
 時間の比 $33:40$ } 逆比



(1) $33 \rightarrow 33/6$
 $33 - 8 = 25$

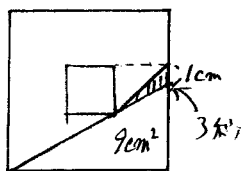
(2) $80 \text{ m/min} \times 33 = 2640$

A 8時25分

A 2640m

3

(1)



$$1 \times 2 \times \frac{1}{2} = 1 \text{ cm}^2 \quad (1 \text{ 秒で } 1 \text{ cm}^2)$$

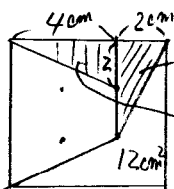
$$9 + 1 = 10$$

$$A \ 10 \text{ cm}^2$$

(2)

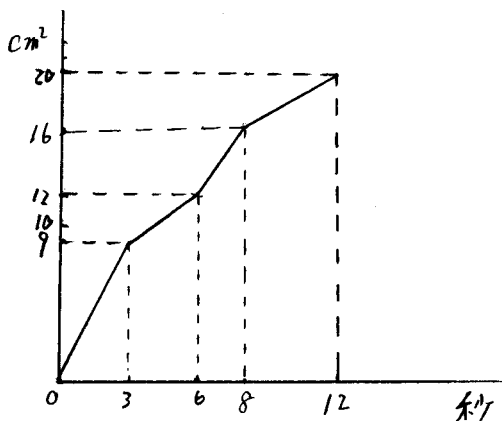
(1)より

KからCまでいくのに $1 \text{ 秒} / \text{cm}^2$ で $9 + 1 \times 3 = 12 \text{ cm}^2$ に至る



$$2 \text{ 秒で } 2 \times 4 \times \frac{1}{2} = 4 \text{ cm}^2 \quad (2 \text{ cm}^2 / \text{秒})$$

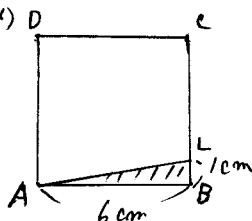
$$4 \text{ 秒で } 4 \times 2 \times \frac{1}{2} = 4 \text{ cm}^2 \quad (1 \text{ cm}^2 / \text{秒})$$



(3)

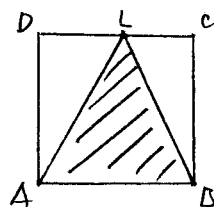
8秒/16cm² から $1 \text{ cm}^2 / \text{秒}$ でふえ3秒で $(18 - 16) \div 1 = 2 \text{ 秒}$ $8 + 2 = 10$ A. 10秒後

(4)



B~Cまで $6 \times 1 \times \frac{1}{2} = 3 \text{ cm}^2 / \text{秒}$ ずつふえる。この間 6秒

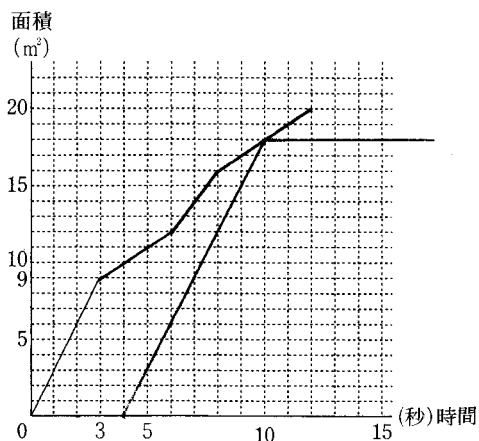
$$C \text{ で } 6 \times 6 \times \frac{1}{2} = 18 \text{ cm}^2$$



C~Dまでは 18 cm^2 のまま

グラフにすると右図

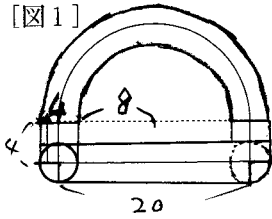
(3)の10秒までに 18 cm^2 に達しないと
グラフが離れてしまうので



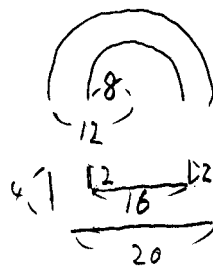
A. 4秒以内

4

[図1]



(1)



$$12 \times 2 \times 3.14 \times \frac{1}{2} + 8 \times 2 \times 3.14 \times \frac{1}{2}$$

$$= \frac{10}{20} \times 2 \times 3.14 \times \frac{1}{2} = 62.8 \text{ cm}$$

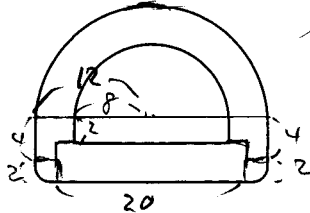
$$4 \times \left(\frac{12}{16} + \frac{12}{16} \right) \times 4 = 4 \times 2 + 2 \times 2 + 16 + 20 = 48$$

$$= 4 \times 3.14 \times \frac{1}{4} \times 2 = 6.28 \text{ cm}$$

$$62.8 + 48 + 6.28 = 117.08$$

A. 117.08 cm

(2)



$$12 \times 12 \times 3.14 \times \frac{1}{2} - 8 \times 8 \times 3.14 \times \frac{1}{2}$$

$$= (144 - 64) \times 3.14 \times \frac{1}{2}$$

$$= \frac{80}{80} \times 3.14 \times \frac{1}{2} = 125.6$$

$$\square \square = (4 \times 4 - 2 \times 2) \times 2 = 24$$

$$\square = 4 \times 20 = 80$$

$$\square \square = 2 \times 2 \times 3.14 \times \frac{1}{2} = 6.28$$

$$125.6 + 24 + 80 + 6.28 = 235.88$$

A. 235.88 cm²

5) ①) 水の体積 = $9 \times 12 \times 8 = 864 \text{ cm}^3$

②) ①) の底面の合計 = $(3+9) \times 12 = 144 \text{ cm}^2$

等くなる時の深さ = $864 \div 144 = 6 \text{ cm}$

$10 - 6 = 4 \text{ cm}$ 分 上は空間 → おもりの体積と等しい

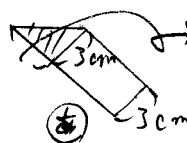
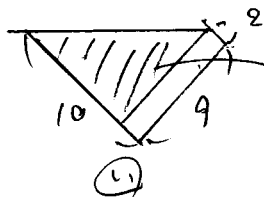
$$9 \times 12 \times 4 = 432 \text{ cm}^3$$

$$432 \div (3 \times 3 \times 3) = 16$$

A. 16個

(2) ①) の体積 $9 \times 12 \times 6 = 648 \text{ cm}^3$ $(x+10) \times 9 \times 12 \div 2 = 648$

$$x = 648 \times 2 \div (9 \times 12) - 10 = 2$$



$$8:9 = \square:3$$

$$\square = \frac{8}{3} \text{ cm}$$

②) の体積

$$3 \times \frac{8}{3} \times 12 \times \frac{1}{2}$$

$$= 48 \text{ cm}^3$$

③) $= 864 - 648 = 216$

$216 - 48 = 168$

$3 \times \square \times 12 = 168$

$\square = 4\frac{2}{3}$

$z = 4\frac{2}{3} + \frac{8}{3} = 7\frac{1}{3}$

A. $x = 2 \text{ cm}$ $z = 7\frac{1}{3} \text{ cm}$