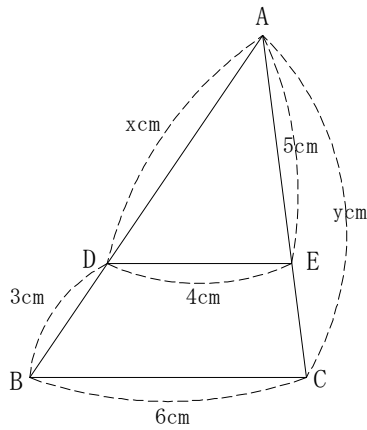


1. (1)



$$\frac{x}{4} = \frac{x+3}{6}$$

$$6x = 4x + 12$$

$$2x = 12$$

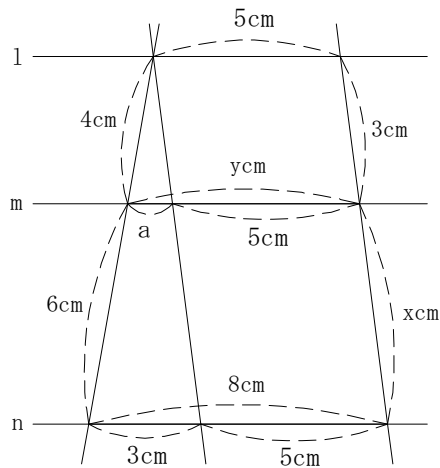
$$x = 6\text{cm}$$

$$\frac{5}{4} = \frac{y}{6}$$

$$4y = 30$$

$$y = \frac{15}{2}\text{cm}$$

(2) (l//m//n)



$$\frac{4}{a} = \frac{4+6}{3}$$

$$10a = 12$$

$$a = \frac{6}{5}$$

$$y = a + 5$$

$$= \frac{6}{5} + 5$$

$$= \frac{31}{5}\text{cm}$$

$$\frac{3}{x} = \frac{4}{6}$$

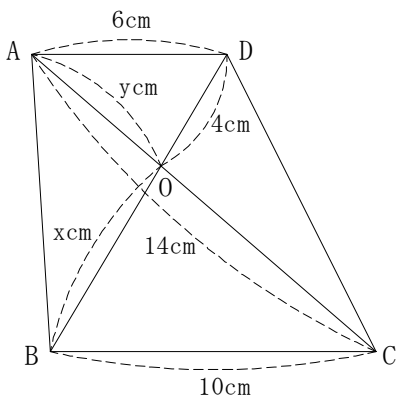
$$4x = 18$$

$$x = \frac{9}{2}\text{cm}$$

(3) (AD//BC)

$\triangle OAD \sim \triangle OCB$ より

$AO:CO = 3:5$ より



$$\frac{4}{x} = \frac{6}{10}$$

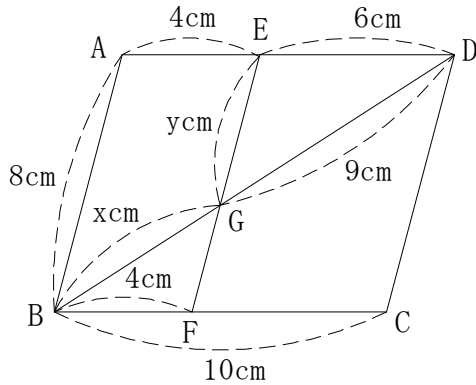
$$6x = 40$$

$$x = \frac{20}{3}\text{cm}$$

$$y = 14 \times \frac{3}{3+5}$$

$$= \frac{21}{4}\text{cm}$$

(4) (四角形ABCDは平行四辺形, AB//EF)



$$BF = 4cm \quad ED = 6cm$$

$\triangle GDE \sim \triangle GBF$ より $\triangle ABD$ で $AB \parallel EG$ だから

$$\frac{9}{x} = \frac{6}{4}$$

$$\frac{y}{8} = \frac{6}{6+4}$$

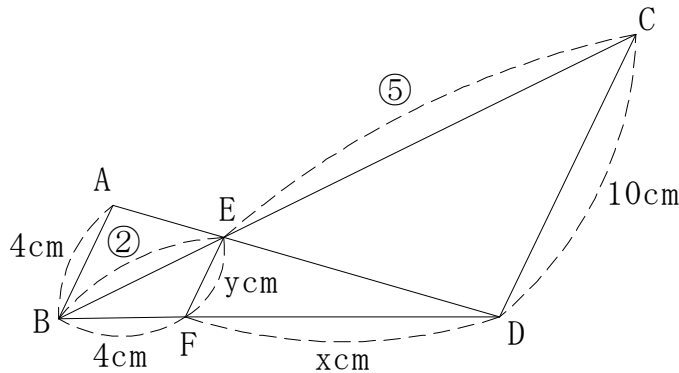
$$6x = 36$$

$$10y = 48$$

$$x = 6cm$$

$$y = \frac{24}{5}cm$$

(5) ($AB \parallel EF \parallel CD$)



$\triangle ABE \sim \triangle CDE$ より

$$BE:EC = 4:10 = 2:5$$

$$BE:EC = 2:5 = 4:x$$

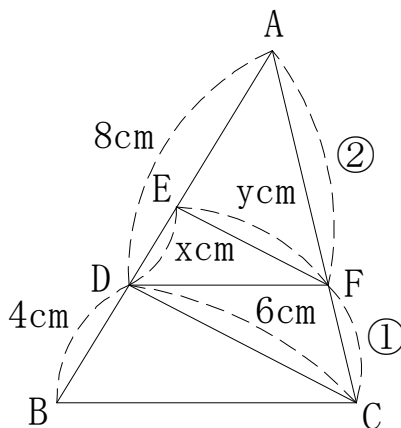
$$2x = 20$$

$$x = 10cm$$

$$\frac{y}{10} = \frac{4}{4+x} = \frac{4}{14} = \frac{2}{7}$$

$$7y = 20 \quad y = \frac{20}{7}cm$$

(6) ($DF \parallel BC, EF \parallel DC$)



$DF \parallel BC$ より

$$AF:FC = 8:4 = 2:1$$

$EF \parallel DC$ より

$$AE:ED = 2:1$$

よって

$$x = 8 \times \frac{1}{2+1} = \frac{8}{3}cm$$

$$\frac{y}{6} = \frac{2}{2+1}$$

$$3y = 12$$

$$y = 4cm$$

2. (1) $\triangle ABG \sim \triangle CFG$ より
 $AG:GC = AB:CF = (1+2):2 = 3:2$

(2) $\triangle EBH \sim \triangle CFH$

$$EB = \frac{1}{2}AB \quad CF = \frac{2}{3}DC \quad \text{より}$$

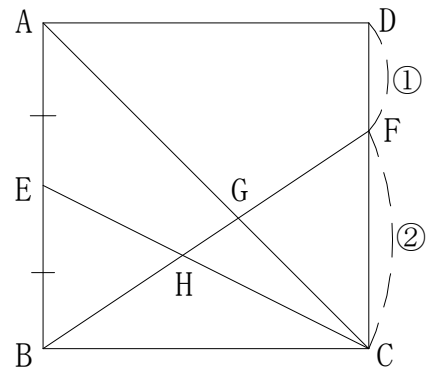
$$EB:CF = \frac{1}{2} : \frac{2}{3} = 3:4$$

よって

$$BH = \frac{3}{7}BF \quad \dots\dots \textcircled{1}$$

また(1)より

$$BG = \frac{3}{5}BF \quad \dots\dots \textcircled{2}$$



①, ②より

$$GH = BG - BH = \frac{6}{35}BF \quad \dots\dots \textcircled{3}$$

①, ③より

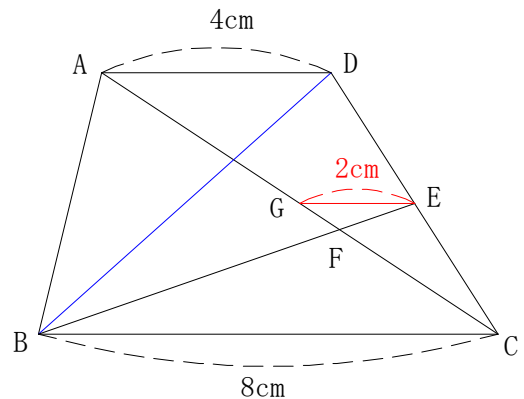
$$BH:GH = \frac{3}{7} : \frac{6}{35} = 5:2$$

3. (1) 点Eを通り, BCに平行な直線を引き, ACとの交点をGとすると, GはACの中点となるから

$$GE = 4 \times \frac{1}{2} = 2cm$$

$\triangle FEG \sim \triangle FCB$ より

$$BF:FE = BC:EG = 8:2 \\ = 4:1$$



(2) (1)より

$$\triangle CEF = \frac{1}{5}\triangle EBC$$

$$= \frac{1}{5} \times \frac{1}{2}\triangle DBC \quad (\text{点EはDCの中点だから})$$

$$= \frac{1}{5} \times \frac{1}{2} \times \frac{2}{3}\text{台形ABCD}$$

$$= \frac{1}{15}\text{台形ABCD} \quad \frac{1}{15} \text{ 倍}$$

以上