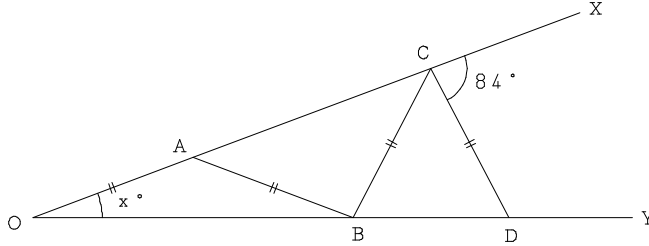


3. 図形に強くなろう！

数学に強くなろう(目次)へ

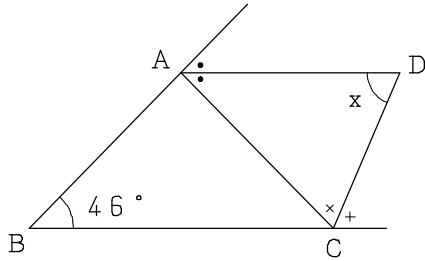
問題1.2,3 へ

1. (1)



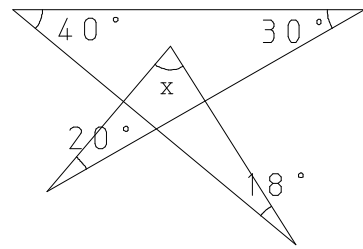
$$4x = 84 \quad x = 21^\circ$$

(2)



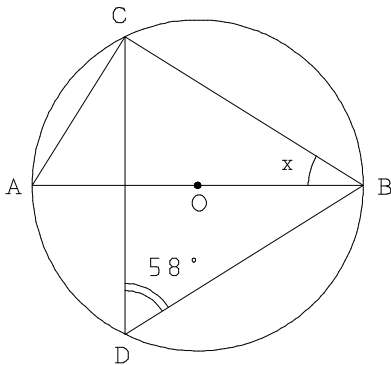
$$\begin{aligned} 46 + 180 - 2x + 180 - 2x &= 180 \\ 2x + 2x &= 226 \quad x + x = 113 \\ x &= 180 - 113 = 67^\circ \end{aligned}$$

(3)



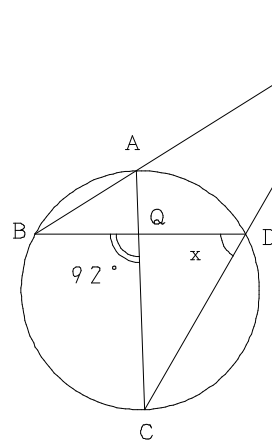
$$\begin{aligned} x + 40 + 30 + 20 + 18 &= 180 \\ x &= 72^\circ \end{aligned}$$

(4)



$$x = 90 - 58 = 32^\circ$$

(5)

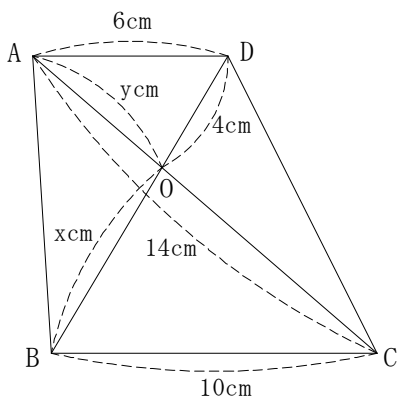


$$\begin{aligned} x + \angle QCD &= 92 \\ x = \angle BAQ &= 28 + \angle QCD \\ x + x - 28 &= 92 \\ 2x - 120 & \\ x &= 60^\circ \end{aligned}$$

2. (1) (AD//BC)

$\triangle OAD \sim \triangle OCB$ より

AO:CO=3:5 より



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

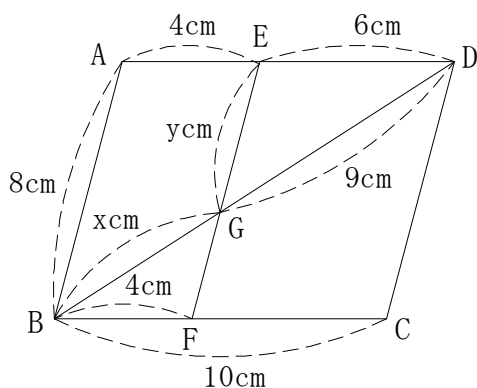
$$6x = 40$$

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

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

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

(2) (四角形ABCDは平行四辺形, AB//EF)



$$BF = 4 \text{ cm} \quad ED = 6 \text{ cm}$$

$\triangle GDE \sim \triangle GBF$ より

$\triangle ABD$ で $AB \parallel EG$ だから

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

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

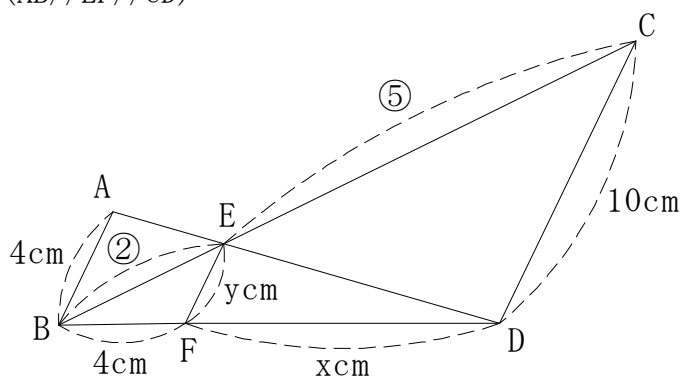
$$6x = 36$$

$$10y = 48$$

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

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

(3) (AB//EF//CD)



$\triangle ABE \sim \triangle CDE$ より

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

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

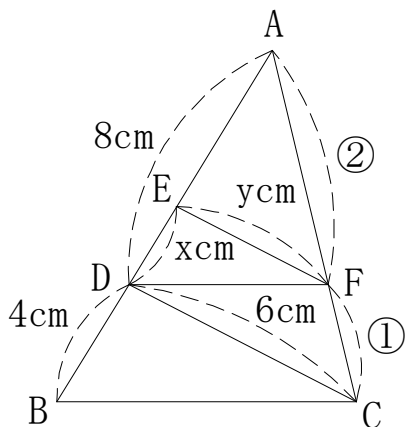
$$2x = 20$$

$$x = 10 \text{ cm}$$

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

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

(4) (DF//BC, EF//DC)



DF//BCより

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

EF//DCより

$$AE:ED=2:1$$

よって

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

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

$$3y = 12$$

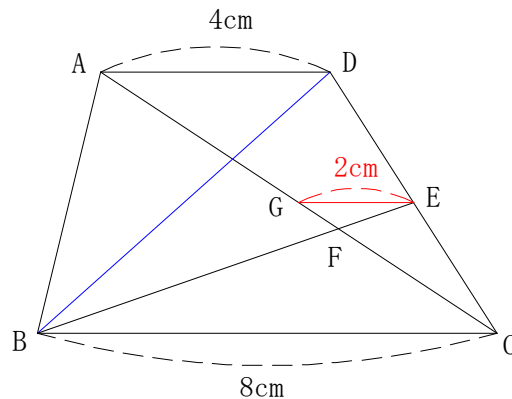
$$y = 4 \text{cm}$$

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

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

$\triangle FEG \sim \triangle FCB$ より

$$\begin{aligned} BF:FE &= BC:EG = 8:2 \\ &= 4:1 \end{aligned}$$



- (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