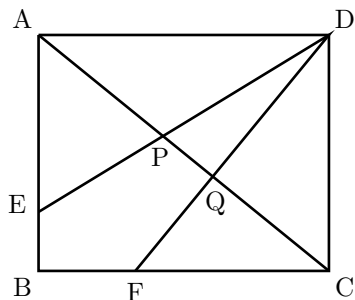


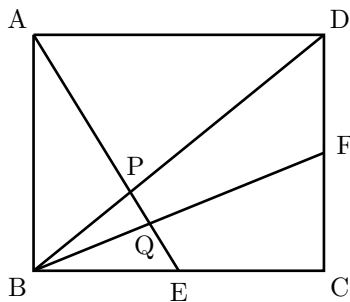
反射テスト 線分比 長方形と連比 02

1. 下図の長方形について問に答えよ。(S級1分45秒, A級3分40秒, B級6分, C級10分)

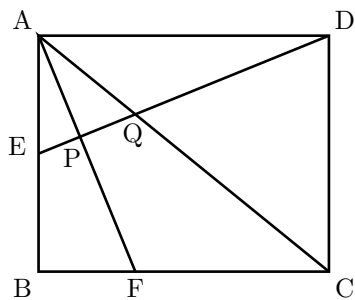
(1) $AE:EB = 3:1$, $BF:FC = 1:2$ のとき, $AP:PQ:QC$ を求めよ.



(2) $BE:EC = 1:1$, $CF:FD = 1:1$ のとき, $AP:PQ:QE$ を求めよ.

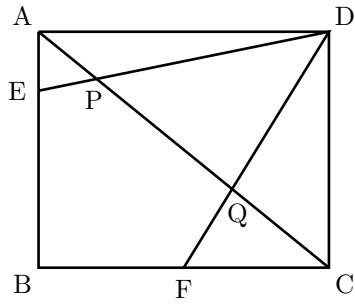


(3) $AE:EB = 1:1$, $BF:FC = 1:2$ のとき, $EP:PQ:QD$ を求めよ.

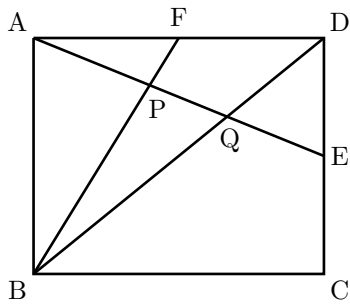


2. 下図の長方形について問に答えよ。(S級1分45秒, A級3分40秒, B級6分, C級10分)

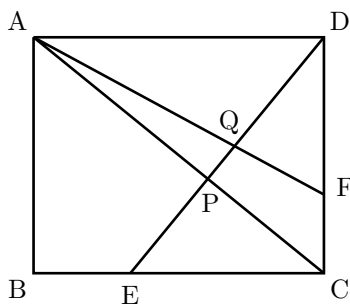
(1) $AE:EB = 1:3$, $BF:FC = 1:1$ のとき, $AP:PQ:QC$ を求めよ.



(2) $CE:ED = 1:1$, $DF:FA = 1:1$ のとき, $AP:PQ:QE$ を求めよ.



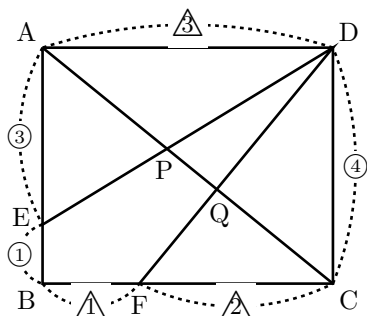
(3) $BE:EC = 1:2$, $CF:FD = 1:2$ のとき, $EP:PQ:QD$ を求めよ.



反射テスト 線分比 長方形と連比 02 解答解説

1. 下図の長方形について問に答えよ。(S級1分45秒, A級3分40秒, B級6分, C級10分)

(1) $AE:EB = 3:1$, $BF:FC = 1:2$ のとき, $AP:PQ:QC$ を求めよ.



★直線図形の基本は三角形

$$\triangle PAE \sim \triangle PCD \Rightarrow AP:PC = \textcircled{3}:\textcircled{4} = 3:4$$

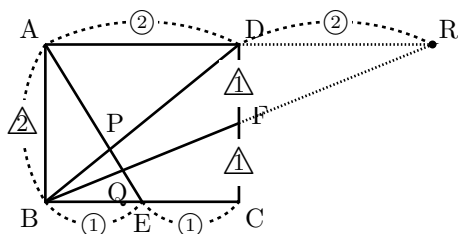
$$\therefore AP = \frac{3}{7}AC \quad PC = \frac{4}{7}AC$$

$$\triangle QDA \sim \triangle QFC \Rightarrow AQ:QC = \textcircled{1}:\textcircled{2} = 3:2$$

$$\therefore AQ = \frac{3}{5}AC \quad QC = \frac{2}{5}AC$$

$$\therefore AP:PQ:QC = \frac{3}{7} : \left(\frac{3}{5} - \frac{3}{7}\right) : \frac{2}{5} = 15:6:14 \quad \dots\text{答え}$$

(2) $BE:EC = 1:1$, $CF:FD = 1:1$ のとき, $AP:PQ:QE$ を求めよ.



★なければ作れ

$AQ:QE$ が知りたいが相似な三角形がないので補助線を引いて作る.

$$\triangle FRD \equiv \triangle FBC \text{ により, } RD = BC = \textcircled{2}$$

★直線図形の基本は三角形

$$\triangle PDA \sim \triangle PBE \Rightarrow AP:PE = \textcircled{2}:\textcircled{1} = 2:1$$

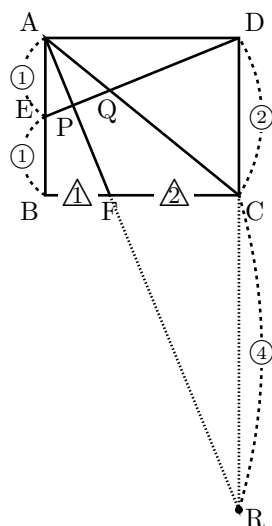
$$\therefore AP = \frac{2}{3}AE \quad PE = \frac{1}{3}AE$$

$$\triangle QRA \sim \triangle QBE \Rightarrow AQ:QE = (\textcircled{2} + \textcircled{2}):\textcircled{1} = 4:1$$

$$\therefore AQ = \frac{4}{5}AE \quad QE = \frac{1}{5}AE$$

$$\therefore AP:PQ:QE = \frac{2}{3} : \left(\frac{4}{5} - \frac{2}{3}\right) : \frac{1}{5} = 10:2:3 \quad \dots\text{答え}$$

(3) $AE:EB = 1:1$, $BF:FC = 1:2$ のとき, $EP:PQ:QD$ を求めよ.



★なければ作れ

$EP:PD$ が知りたいが相似な三角形がないので補助線を引いて作る.

$$\triangle FRC \sim \triangle FAB \text{ により, } RC:AB = \textcircled{2}:\textcircled{1} = 2:1 \Rightarrow RC = \textcircled{2} \times 2 = \textcircled{4}$$

★直線図形の基本は三角形

$$\triangle PAE \sim \triangle PRD \Rightarrow EP:PD = \textcircled{1}:(\textcircled{2} + \textcircled{4}) = 1:6$$

$$\therefore EP = \frac{1}{7}ED \quad PD = \frac{6}{7}ED$$

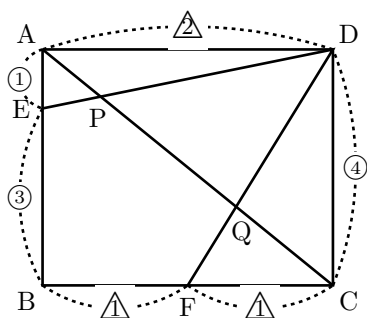
$$\triangle QAE \sim \triangle QCD \Rightarrow EQ:QD = \textcircled{1}:\textcircled{2} = 1:2$$

$$\therefore EQ = \frac{1}{3}ED \quad QD = \frac{2}{3}ED$$

$$\therefore EP:PQ:QD = \frac{1}{7} : \left(\frac{1}{3} - \frac{1}{7}\right) : \frac{2}{3} = 3:4:14 \quad \dots\text{答え}$$

2. 下図の長方形について問に答えよ。(S級1分45秒, A級3分40秒, B級6分, C級10分)

(1) $AE:EB = 1:3$, $BF:FC = 1:1$ のとき, $AP:PQ:QC$ を求めよ.



★ 直線図形の基本は三角形

$$\triangle PAE \sim \triangle PCD \Rightarrow AP:PC = \textcircled{1}:\textcircled{4} = 1:4$$

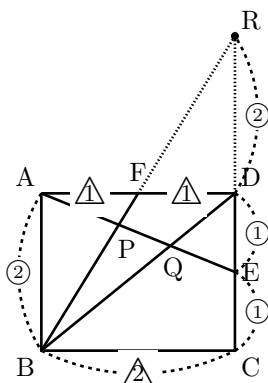
$$\therefore AP = \frac{1}{5}AC \quad PC = \frac{4}{5}AC$$

$$\triangle QDA \sim \triangle QFC \Rightarrow AQ:QC = \triangle:\triangle = 2:1$$

$$\therefore AQ = \frac{2}{3}AC \quad QC = \frac{1}{3}AC$$

$$\therefore AP:PQ:QC = \frac{1}{5} : \left(\frac{2}{3} - \frac{1}{5}\right) : \frac{1}{3} = 3:7:5 \quad \dots\text{答え}$$

(2) $CE:ED = 1:1$, $DF:FA = 1:1$ のとき, $AP:PQ:QE$ を求めよ.



★ なければ作れ

$AP:PE$ が知りたいが相似な三角形がないので補助線を引いて作る.

$$\triangle FDR \equiv \triangle FAB \text{ により, } DR = AB = \textcircled{2}$$

★ 直線図形の基本は三角形

$$\triangle PAB \sim \triangle PER \Rightarrow AP:PE = \textcircled{2}:(\textcircled{2} + \textcircled{1}) = 2:3$$

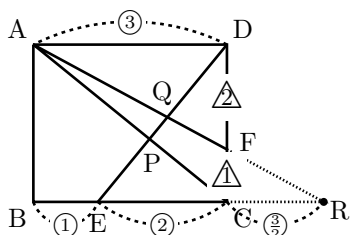
$$\therefore AP = \frac{2}{5}AE \quad PE = \frac{3}{5}AE$$

$$\triangle QAB \sim \triangle QED \Rightarrow AQ:QE = \triangle:\triangle = 2:1$$

$$\therefore AQ = \frac{2}{3}AE \quad QE = \frac{1}{3}AE$$

$$\therefore AP:PQ:QE = \frac{2}{5} : \left(\frac{2}{3} - \frac{2}{5}\right) : \frac{1}{3} = 6:4:5 \quad \dots\text{答え}$$

(3) $BE:EC = 1:2$, $CF:FD = 1:2$ のとき, $EP:PQ:QD$ を求めよ.



★ なければ作れ

$EQ:QD$ が知りたいが相似な三角形がないので補助線を引いて作る.

$$\triangle FCR \sim \triangle FDA \text{ により, } CR:DA = \triangle:\triangle = 1:2 \Rightarrow CR = \textcircled{3} \times \frac{1}{2} = \textcircled{\frac{3}{2}}$$

★ 直線図形の基本は三角形

$$\triangle PEC \sim \triangle PDA \Rightarrow EP:PD = \textcircled{2}:\textcircled{3} = 2:3$$

$$\therefore EP = \frac{2}{5}ED \quad PD = \frac{3}{5}ED$$

$$\triangle QER \sim \triangle QDA \Rightarrow EQ:QD = (\textcircled{2} + \textcircled{\frac{3}{2}}) : \textcircled{3} = 7:6$$

$$\therefore EQ = \frac{7}{13}ED \quad QD = \frac{6}{13}ED$$

$$\therefore EP:PQ:QD = \frac{2}{5} : \left(\frac{7}{13} - \frac{2}{5}\right) : \frac{6}{13} = 26:9:30 \quad \dots\text{答え}$$