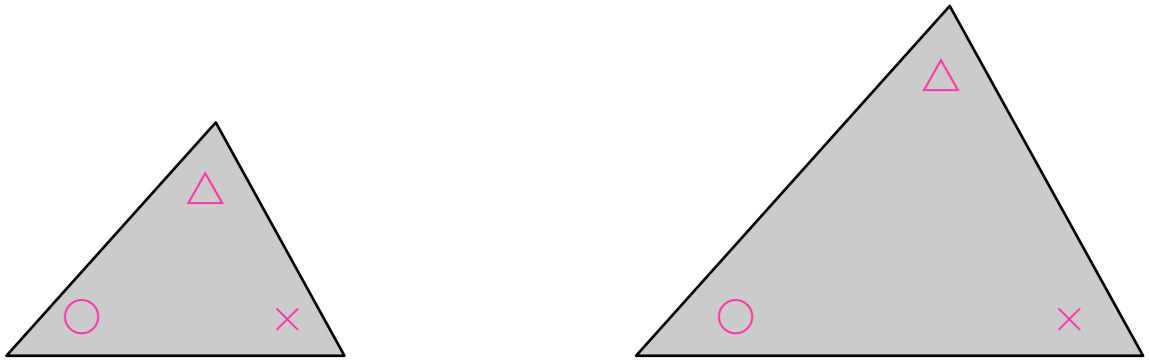
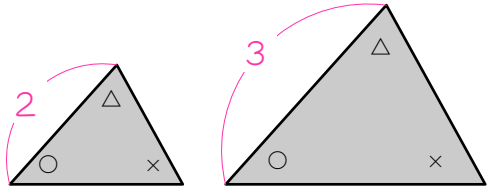
相似形（そうじけい）とは



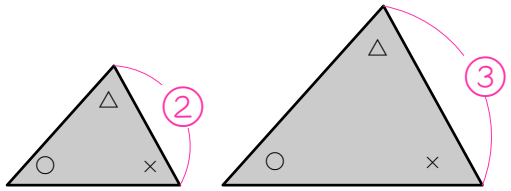
２つの三角形があって、角度が全部同じなら、
２つの三角形は形が同じになります。

形が同じことを「相似（そうじ）」、
形が同じ図形のことを「相似形（そうじけい）」
といいます。

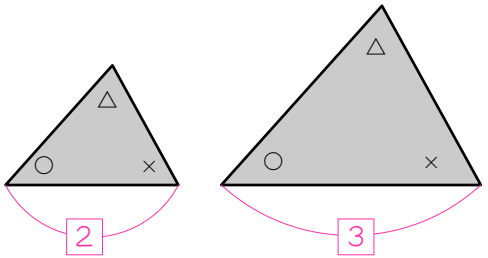
相似比（そうじひ）



△～○が２：３なら



△～×も２：３



○～×も２：３

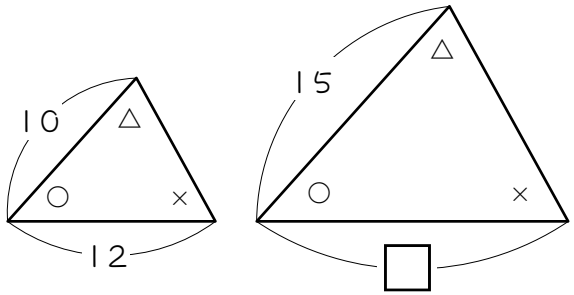
２つの三角形が形が同じ（相似）のとき、
対応する辺の長さの比は等しくなります。

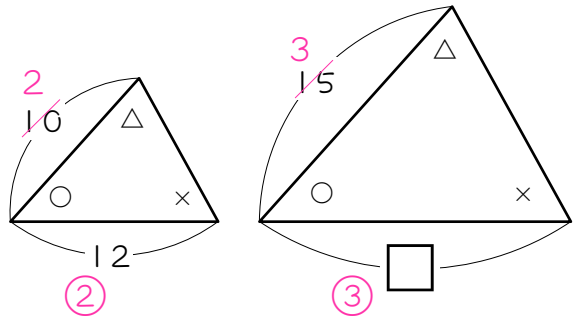
対応する辺の長さの比を「相似比（そうじひ）」といいます。

ステップ1　相似形　-　相似比と長さを求める

1　□にあてはまる数を求めなさい。

例





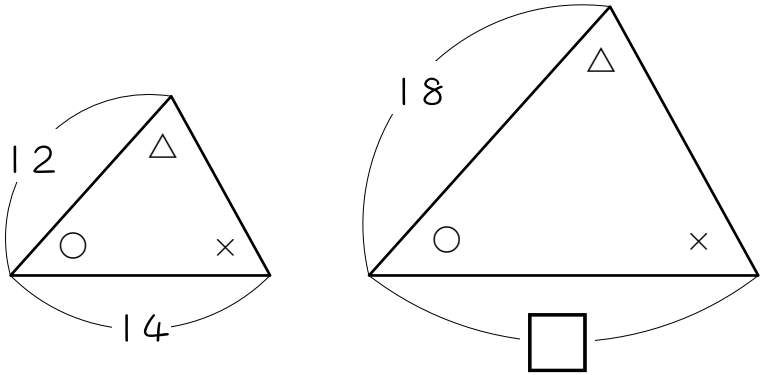
２つの三角形は角度が全て
等しいから形が同じ(相似)

10：15＝２：３　(相似比)

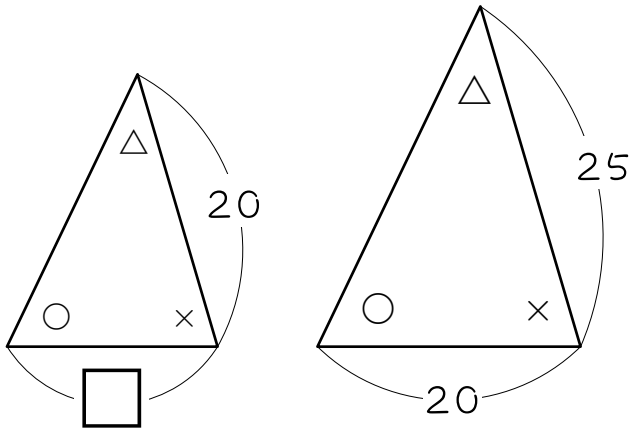
②＝12

③＝18

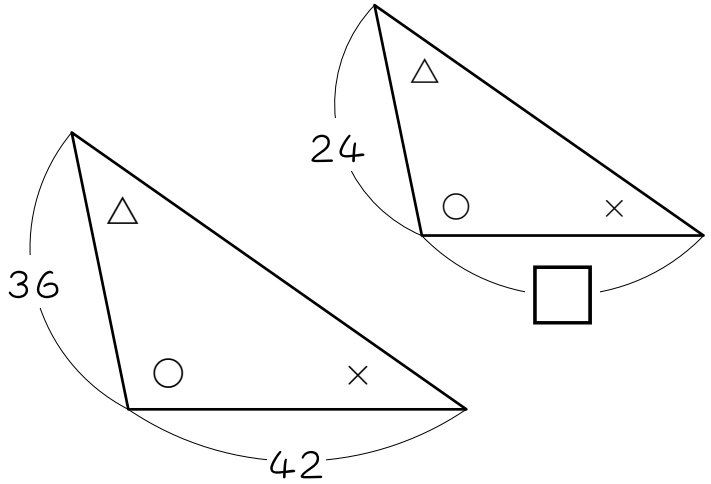
(1)



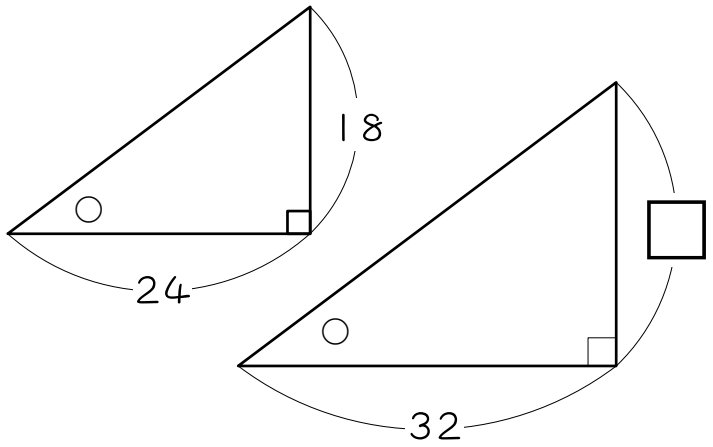
(2)



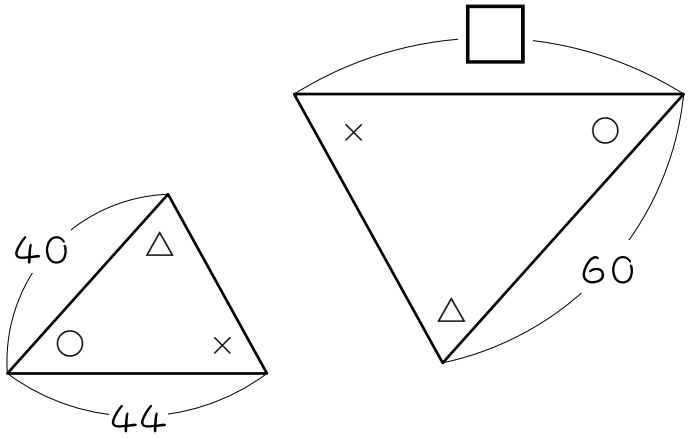
(3)



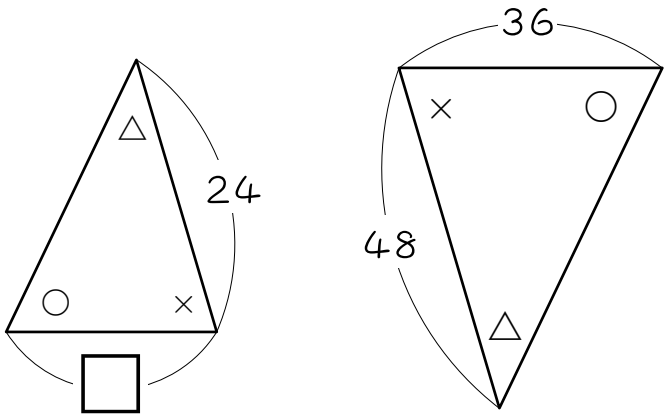
(4)



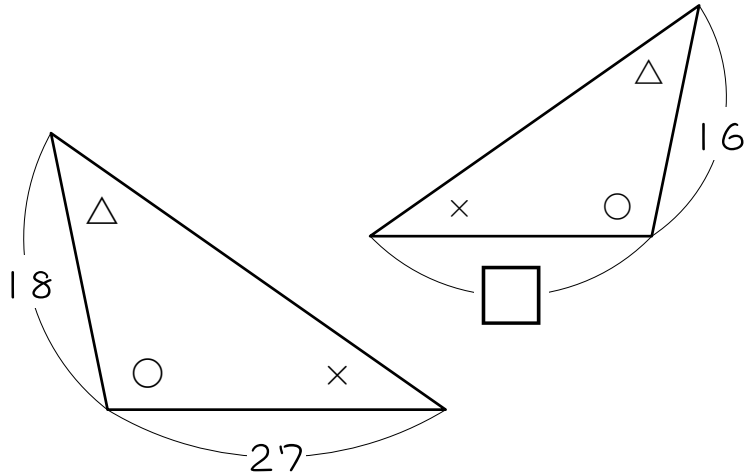
(5)



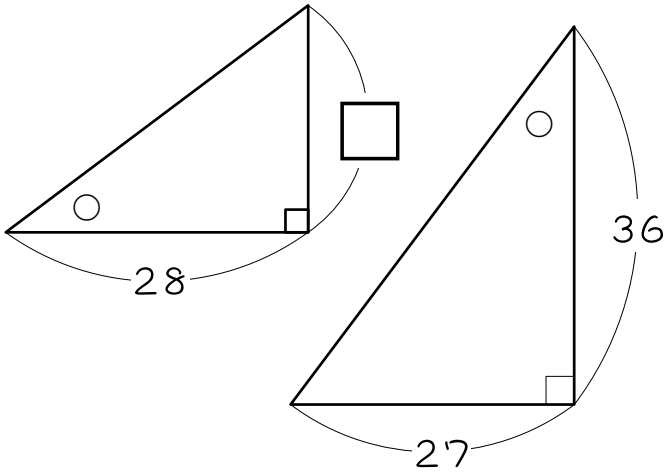
(6)



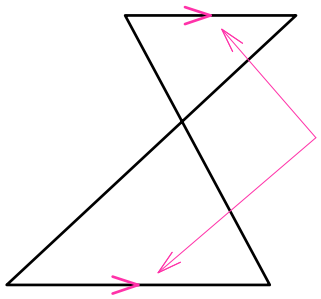
(7)



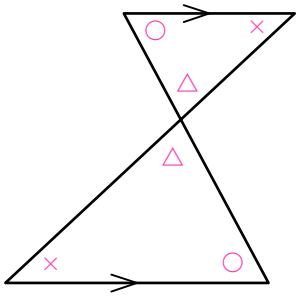
(8)



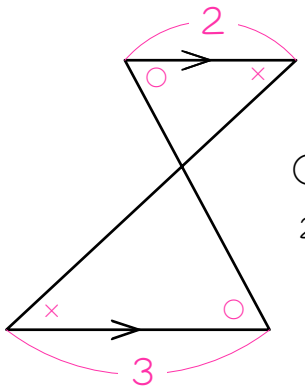
ちょうちょ相似



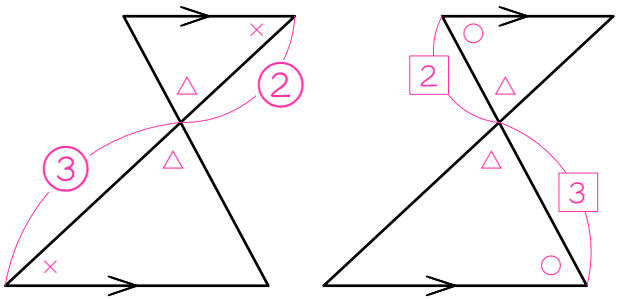
ここが平行
のとき



２つの三角形は角度が
全て等しくなります
↓
相似



〇～×が
２：３なら

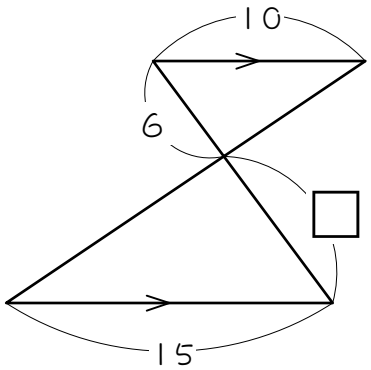


×～△も、〇～△も２：３

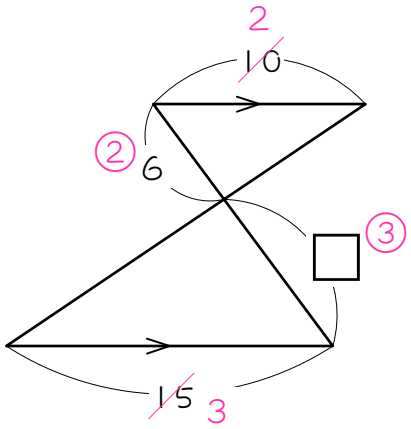
ステップ２　ちょうちょ相似

2　□にあてはまる数を求めなさい。

例

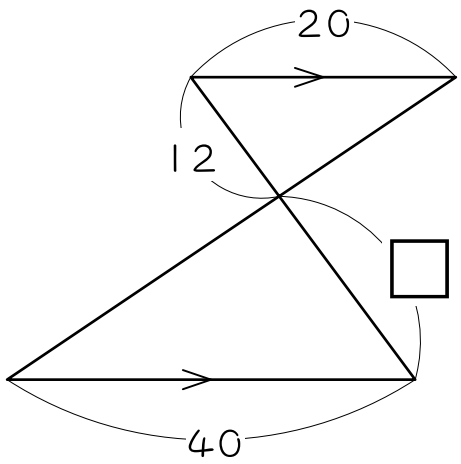


上下の辺が平行だから
ちょうちょ相似

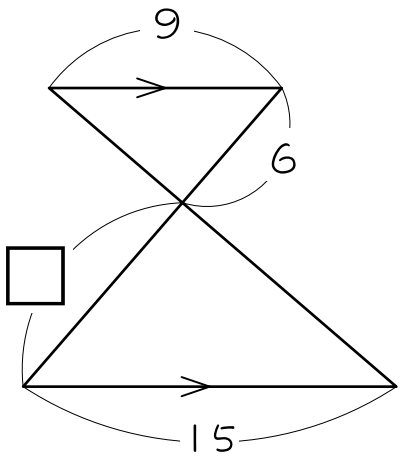


10：15＝２：３　（相似比）
②＝６
③＝９

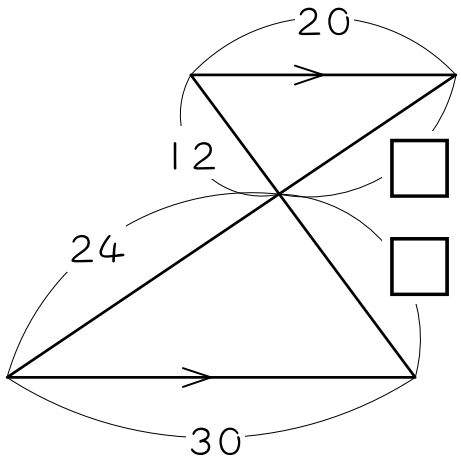
(1)



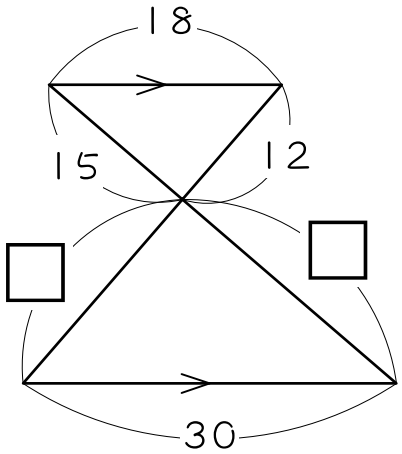
(2)



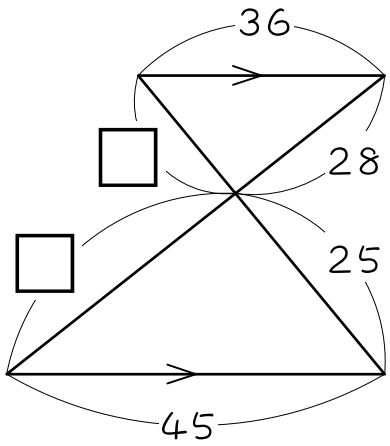
(3)



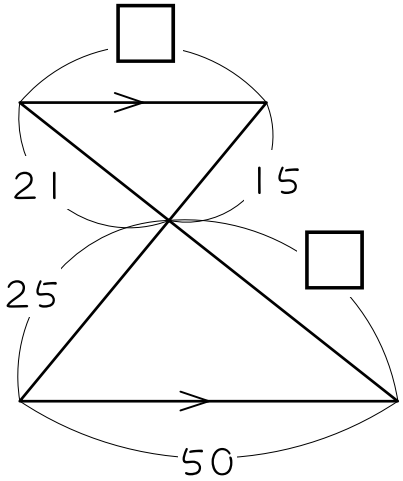
(4)



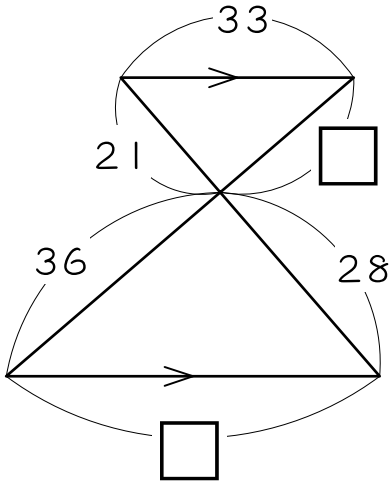
(5)



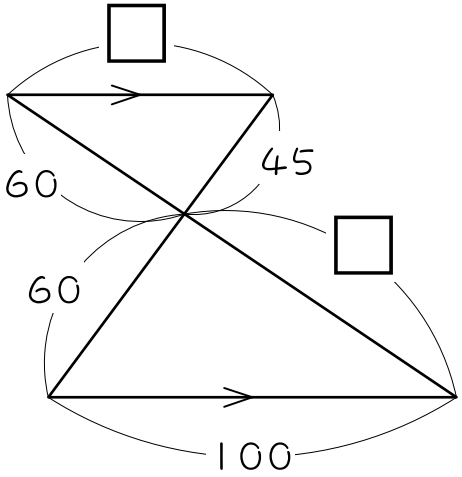
(6)



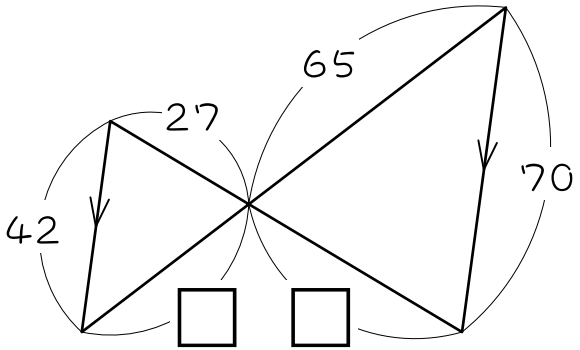
(7)



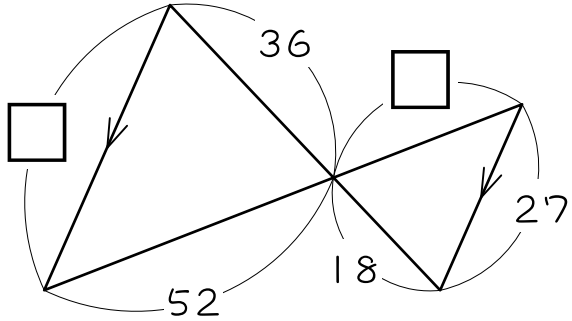
(8)



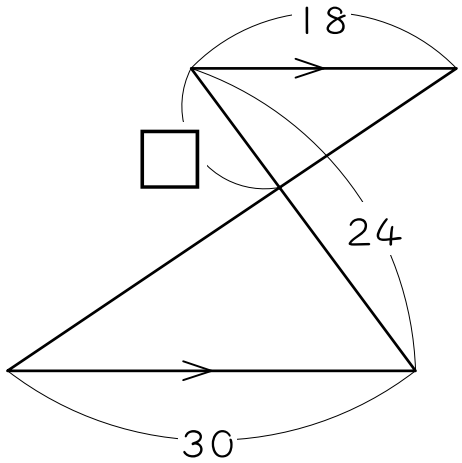
(9)



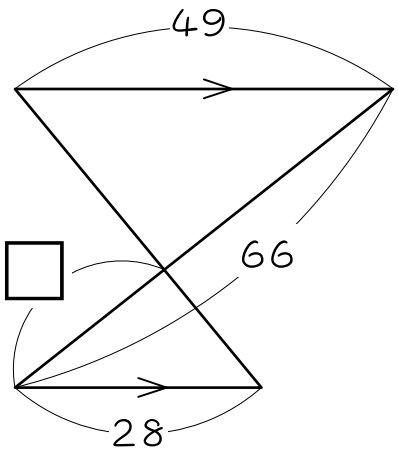
(10)



(11)



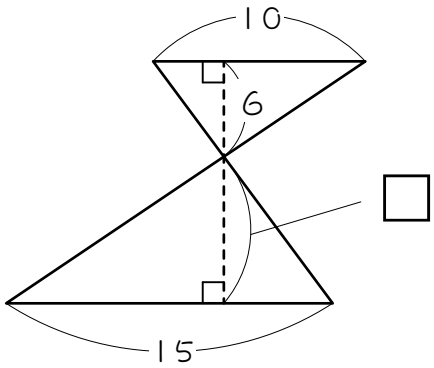
(12)



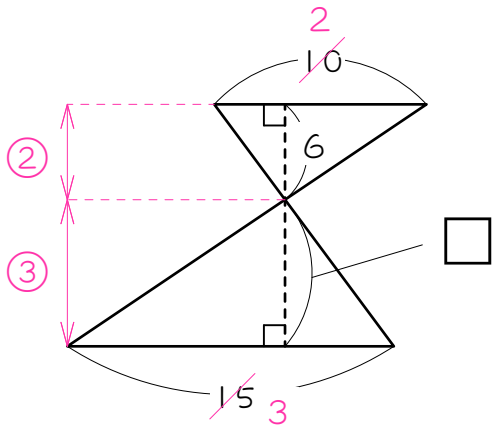
ステップ３　ちょうちょ相似の高さ

３　□にあてはまる数を求めなさい。

例

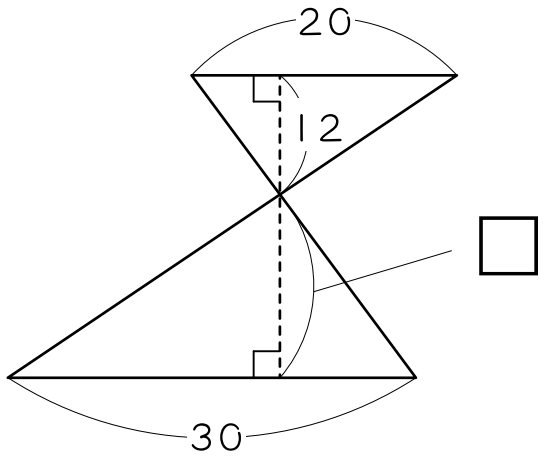


上下の辺が平行だから
ちょうちょ相似

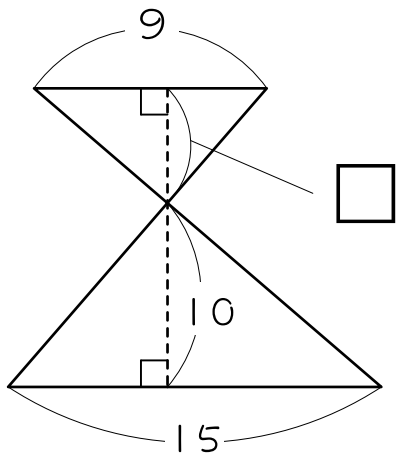


相似比が２：３なら
高さも２：３
②＝６　③＝９

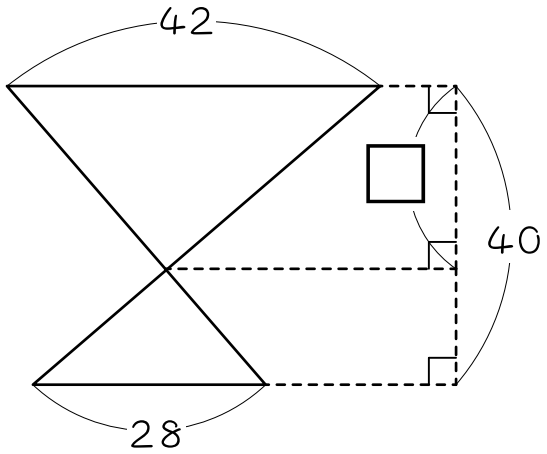
(1)



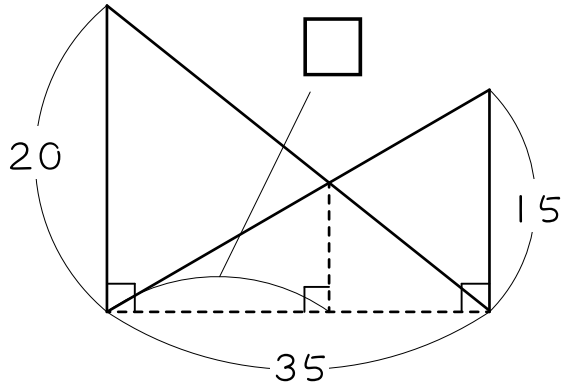
(2)



(3)



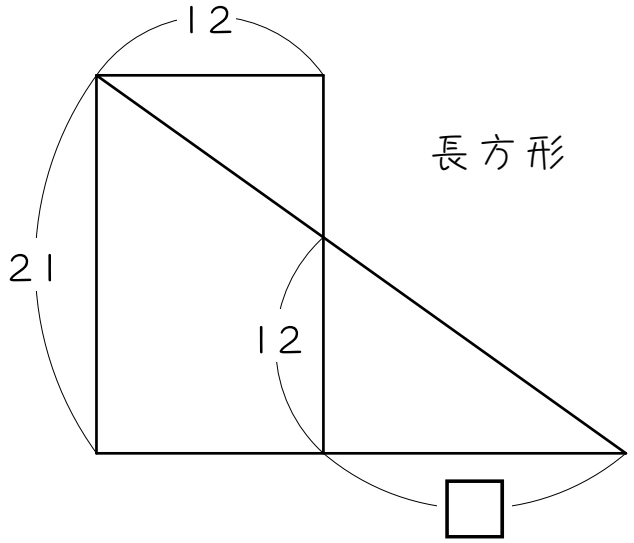
(4)



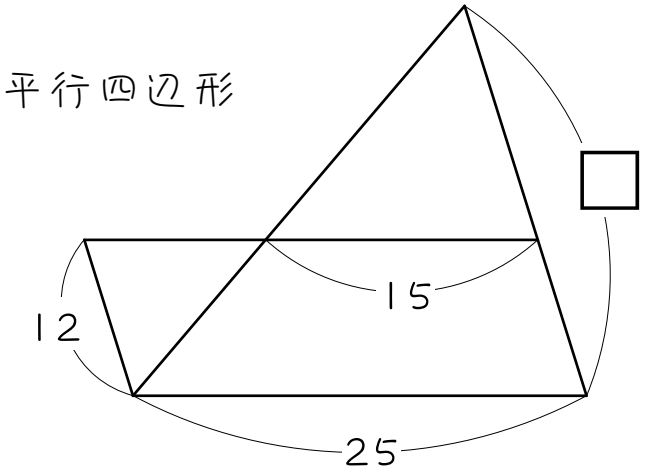
ステップ4　組み合わせ　-　ちょうちょ相似の利用

4　□にあてはまる数を求めなさい。

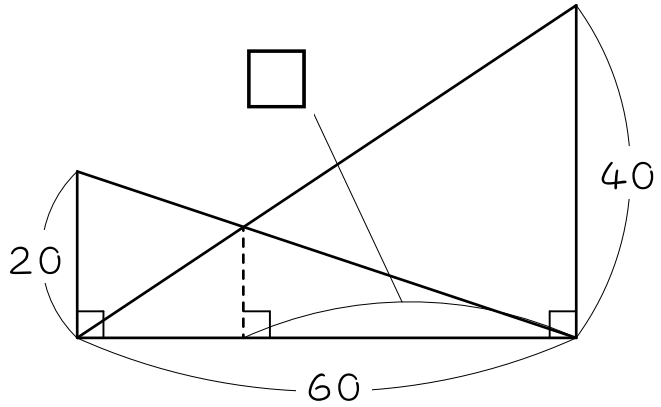
(1)



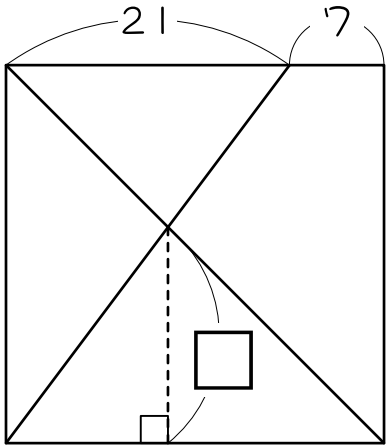
(2)



(3)

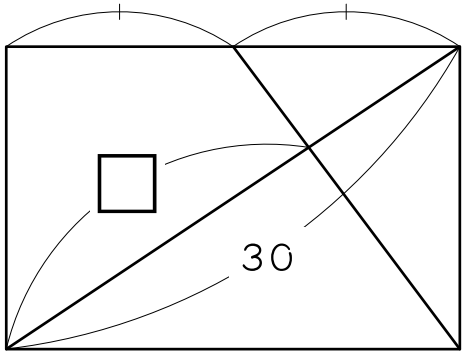


(4)



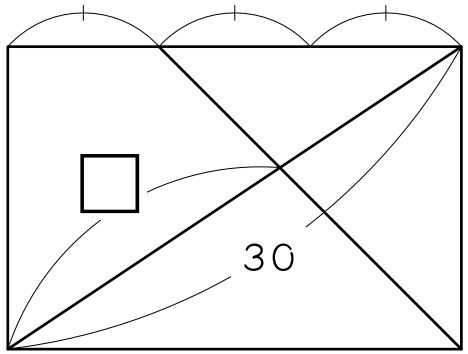
正方形

(5)



長方形

(6)



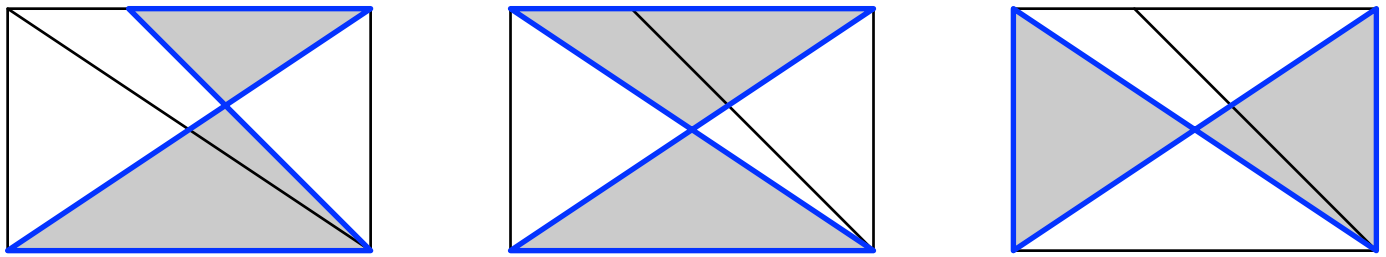
長方形

ステップ5　ちょうちょ相似の発見

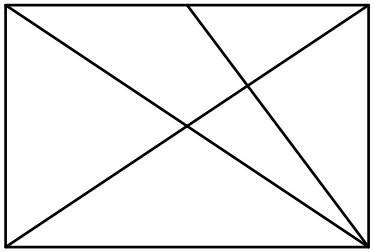
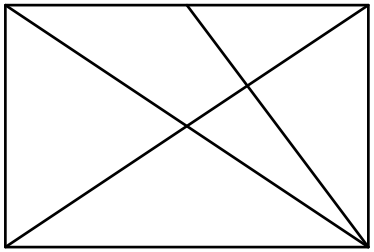
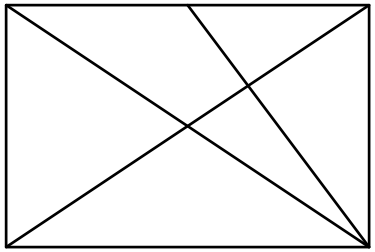
5

次の図には、いくつかのちょうちょ相似があります。例にならって、ちょうちょ相似を色ペンでかこみなさい（合同もふくむ）。

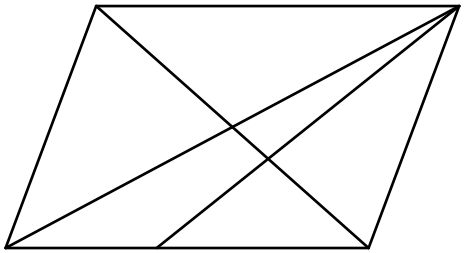
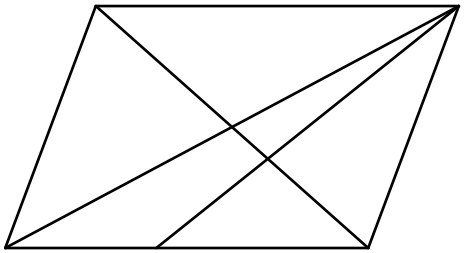
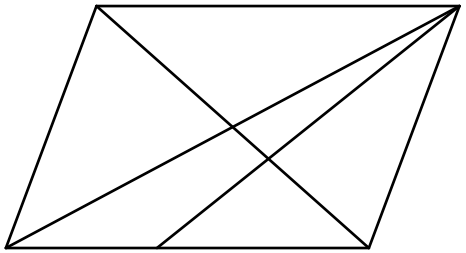
例　長方形



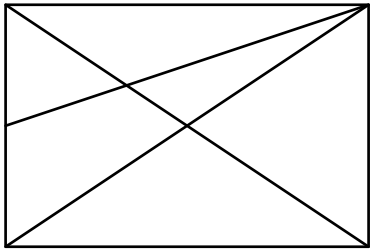
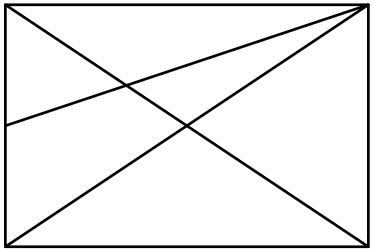
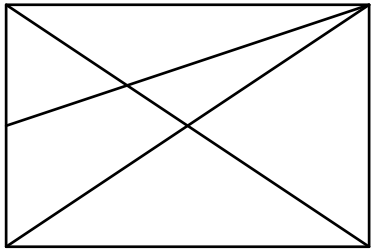
(1) 長方形

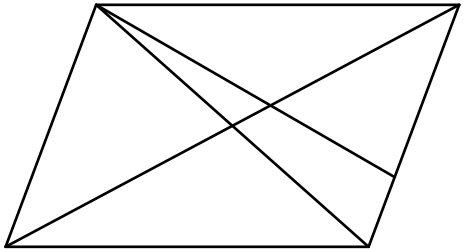
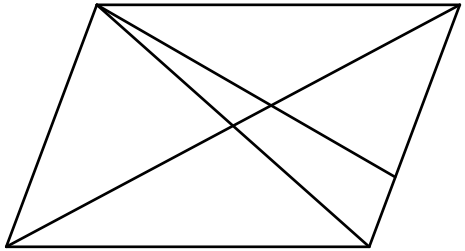
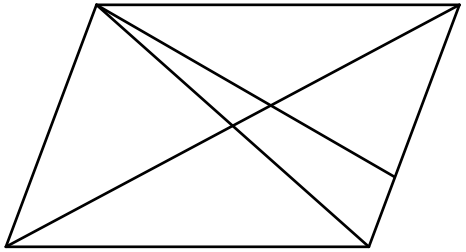
(2) 平行四辺形

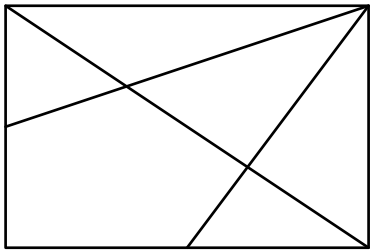
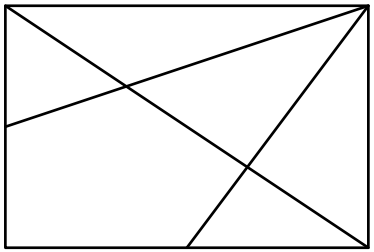
(3) 長方形

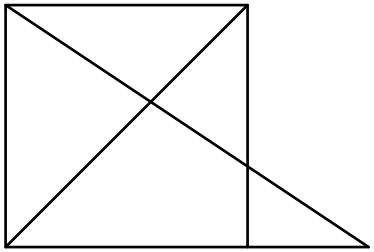
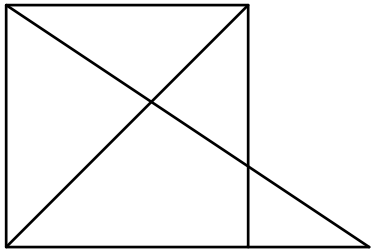
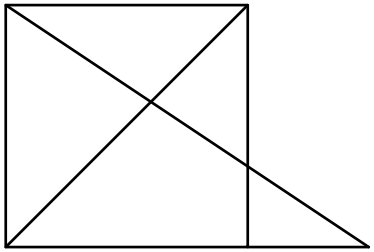
(4) 平行四辺形

(5) 長方形

(6) 正方形

ステップ6　ダブルちょうちょ

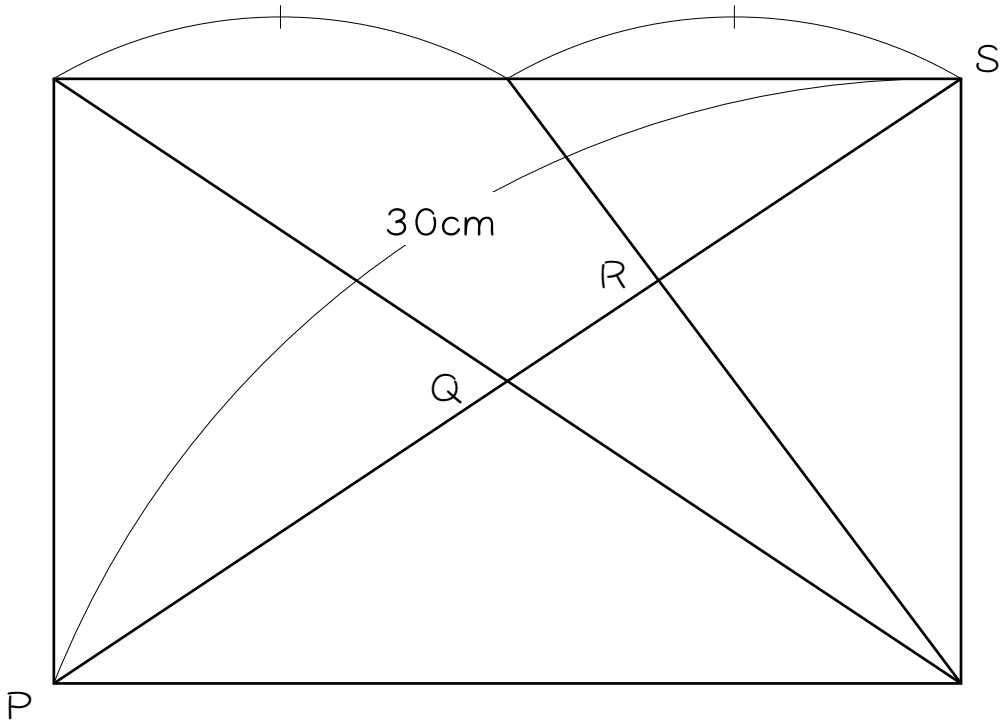
6　図のような長方形において、次の長さを求めなさい。

２組のちょうちょ相似を利用しないと解けません。

(1)　①　PQ

②　RS

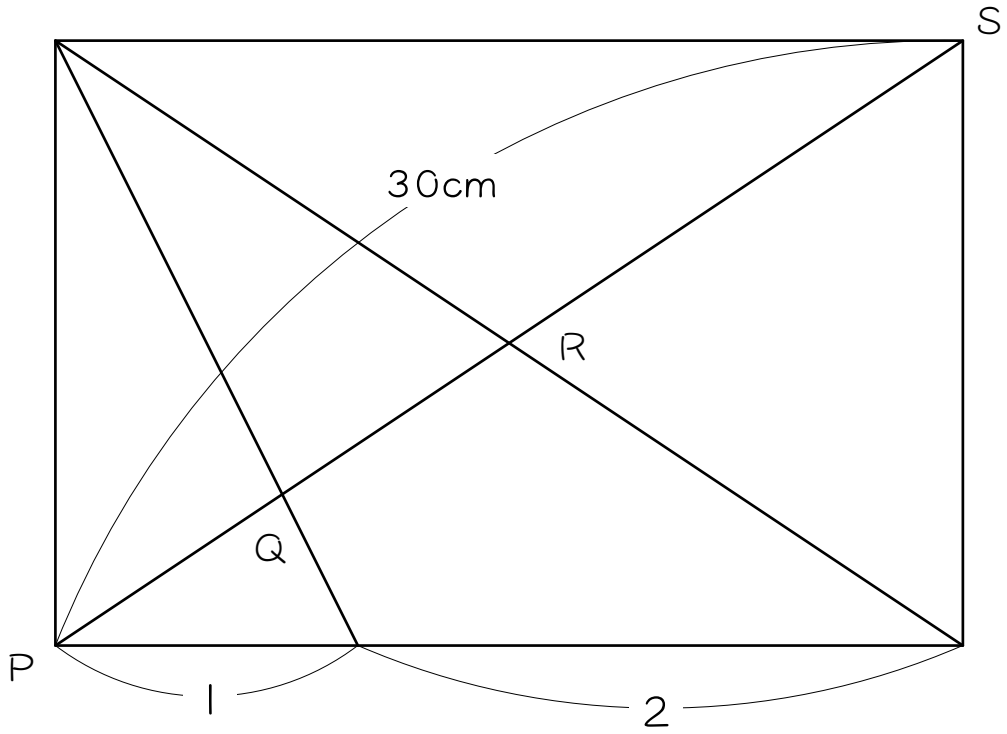
③　QR



(2) ① P Q

② R S

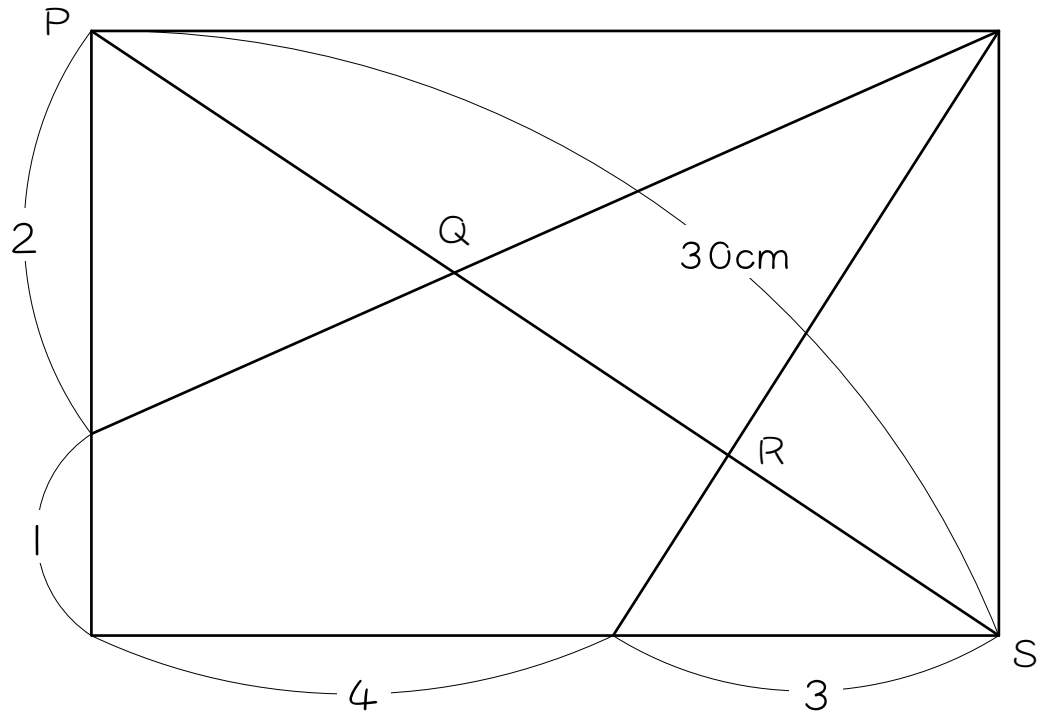
③ Q R



(3) ① P Q

② R S

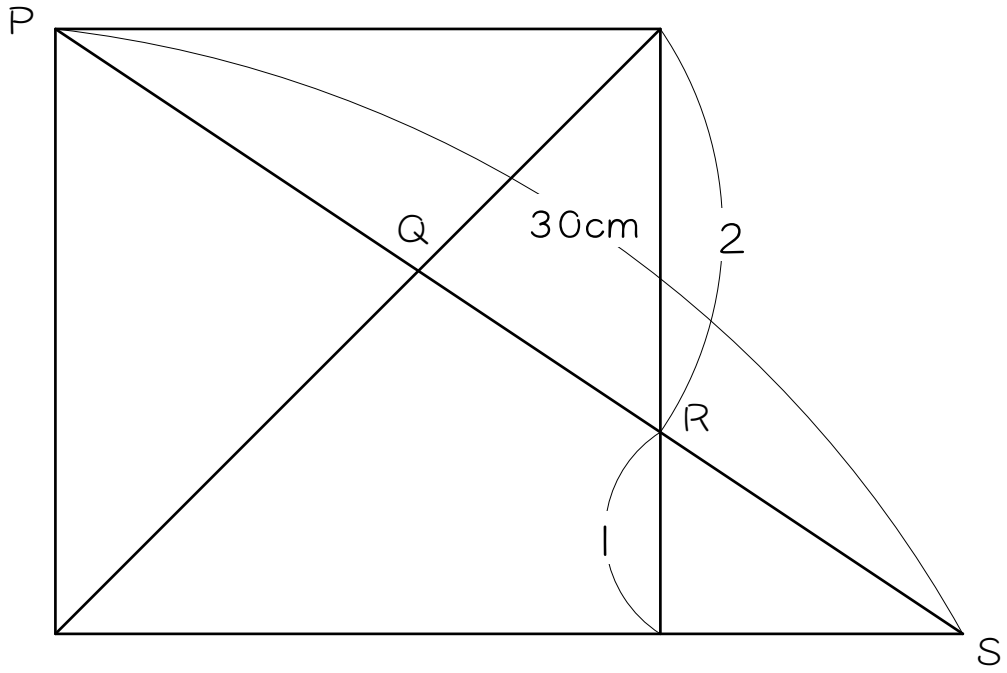
③ Q R



(4) ① P Q

② R S

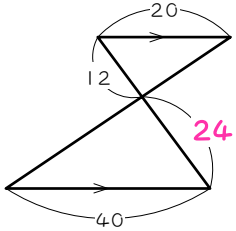
③ Q R



解答

1 (1) 21 (2) 16 (3) 28 (4) 24
(5) 66 (6) 18 (7) 24 (8) 21

2 (1)



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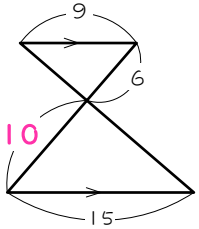

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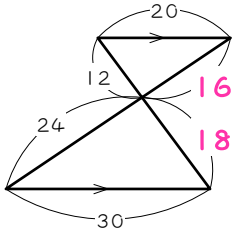

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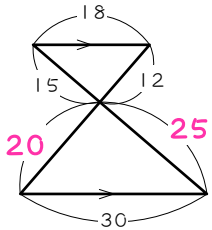

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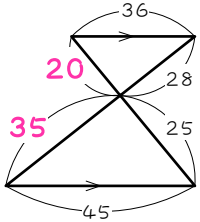

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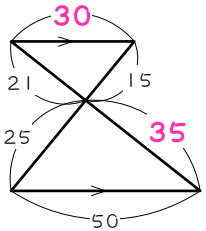

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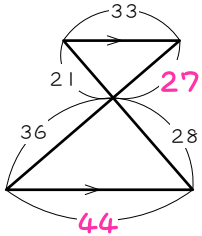

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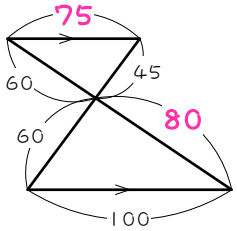

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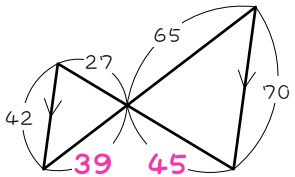

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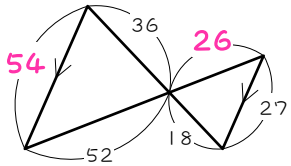

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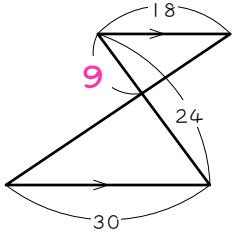

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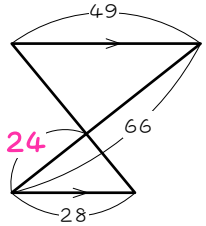

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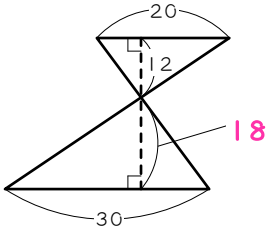

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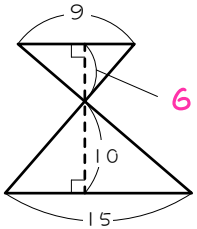

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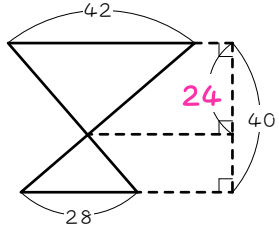

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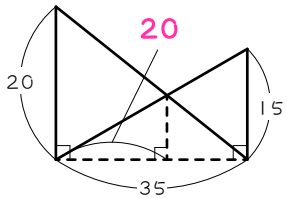

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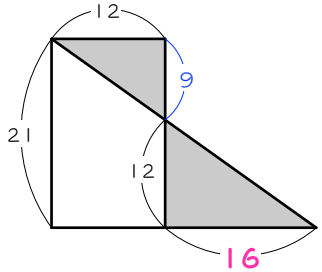

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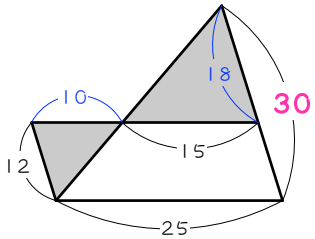

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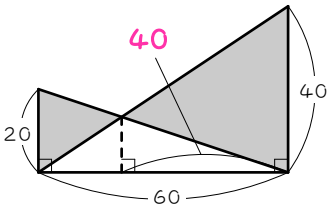

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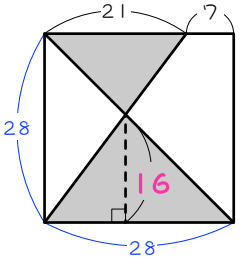

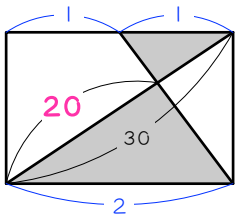

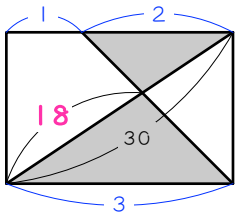

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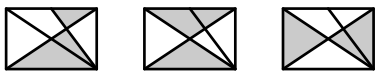

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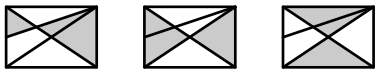

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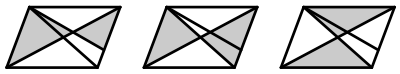

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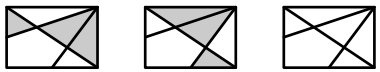

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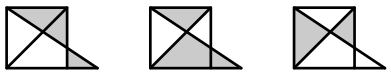
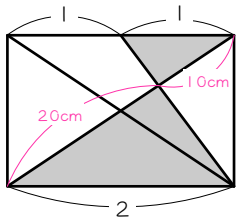
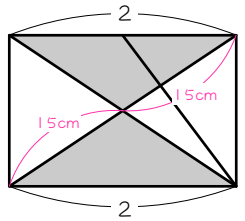
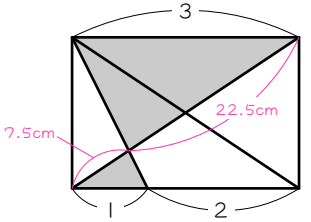


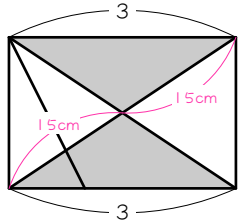
6 (1) ① 15cm
② 10cm
③ 5 cm



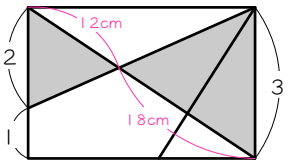


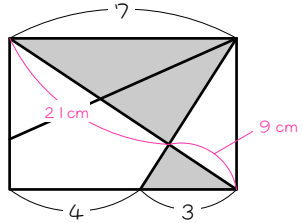
(2) ① 7.5cm
② 15cm
③ 7.5cm





(3) ① 12cm
② 9 cm
③ 9 cm





(4) ① 12cm
② 10cm
③ 8 cm