

班級: 座號: 姓名:

1. 如圖, 在 $\angle ABC$ 與 $\angle DEF$ 中, $\overline{AB} \perp \overline{DE}$, $\overline{EF} \parallel \overline{BC}$,
若 $\angle DEF$ 比 $\angle ABC$ 的3倍多 10° , 則 $\angle ABC = ?$

設 $\angle ABC = x^\circ$, $\angle DEF = (3x + 10)^\circ$

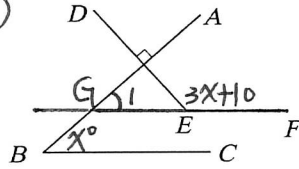
$\therefore \overline{EF} \parallel \overline{BC}$

$\therefore \angle 1 = \angle ABC = x^\circ$

$3x + 10 = x + 90$

$2x = 80$

$x = 40 \Rightarrow \angle ABC = 40^\circ$



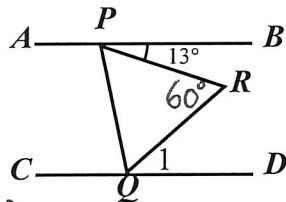
2. 如圖, $\overline{AB} \parallel \overline{CD}$, $\triangle PQR$ 為正三角形, 求 $\angle 1 = ?$

$\therefore \triangle PQR$ 為正 $\triangle$

$\therefore \angle R = 60^\circ$

$\therefore \overline{AB} \parallel \overline{CD}$

$\therefore 13^\circ + \angle 1 = 60^\circ \Rightarrow \angle 1 = 47^\circ$



3. 如右圖, $L \parallel M$, 且 $ABCDE$ 為正五邊形, 則:

(1) $x = ?$ (2) $\angle 1 = ?$

(1) 正五邊形一個內角

$= \frac{540^\circ}{5} = 108^\circ$

$\therefore L \parallel M$

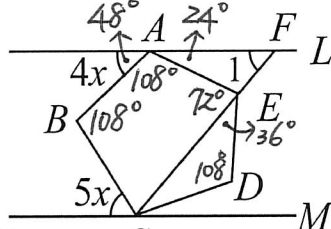
(2) $\triangle CDE$ 為等腰 $\triangle$

$\therefore 4x + 5x = 108 \Rightarrow \angle DEC = \frac{180^\circ - 108^\circ}{2} = 36^\circ$

$x = 12$

$\Rightarrow \angle AEC = 108^\circ - 36^\circ = 72^\circ$

又 $\angle FAE = 180^\circ - 108^\circ - 48^\circ = 24^\circ$



4. 如圖, 已知 $L_1 \parallel L_2$, A 點在直線 L_1 上, 若 $\overline{AB} \parallel \overline{CD}$, 則 $\angle DEF = ?$

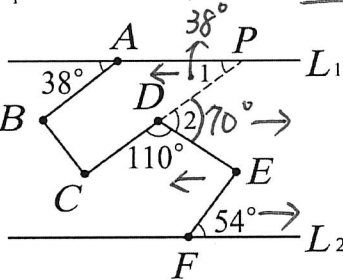
$\therefore \overline{AB} \parallel \overline{CD}$

$\therefore \angle 1 = 38^\circ$

$\angle 2 = 180^\circ - 110^\circ = 70^\circ$

$\therefore L_1 \parallel L_2$

$\therefore 38^\circ + \angle DEF = 70^\circ + 54^\circ$



$\angle DEF = 124^\circ - 38^\circ = 86^\circ$

5. 如圖, $\overline{AB} \parallel \overline{CD}$, 求 $x = ?$ $y = ?$

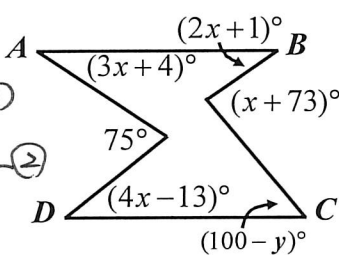
$\therefore \overline{AB} \parallel \overline{CD}$

$\therefore \begin{cases} 3x + 4 + 4x - 13 = 75 & \text{--- ①} \\ 2x + 1 + 100 - y = x + 73 & \text{--- ②} \end{cases}$

由 ① $x = 12$ 代入 ②

$y = 40$

A. $x = 12, y = 40$



6. 如圖, 已知 $L_1 \parallel L_2$,

求 $\angle 1 + \angle 3 = ?$

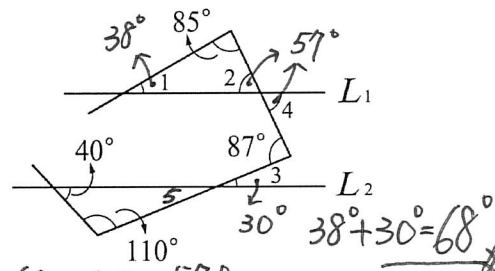
$\angle 3 = \angle 5 = 180^\circ - 40^\circ - 110^\circ = 30^\circ$

$\therefore L_1 \parallel L_2$

$\therefore \angle 4 + 30^\circ = 87^\circ$

$\angle 4 = 57^\circ$

$\Rightarrow \angle 1 = 180^\circ - 57^\circ - 85^\circ = 38^\circ$



7. $L \parallel M$, 四邊形 $ABCD$ 為正方形, 求 $\angle AED = ?$

$\therefore L \parallel M$

$\therefore 5x + 8 + 3x + 2 = 90$

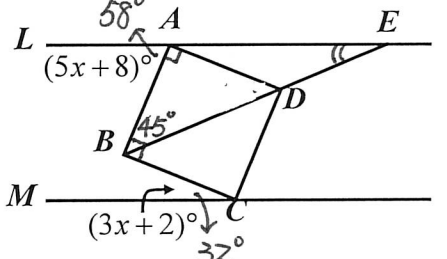
$8x = 80$

$x = 10$

$5 \times 10 + 8 = 58^\circ$

$\triangle ABE$ 中.

$\angle AED = 58^\circ - 45^\circ = 13^\circ$



8. 如圖, 有一張長方形 $ABCD$ 的紙, 沿 $\overline{EF}$ 摺疊, 且 D 點落在 D' 點上, C 點落在 C' 點上, 設 $\angle EFG = 65^\circ$, 求

(1) $\angle 1$ (2) $\angle 2$ (3) $\angle GFC'$

(1) $\angle 3 = \angle 4 = \angle EFG = 65^\circ$

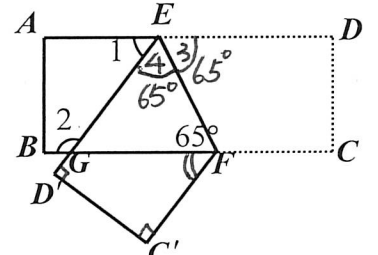
$\Rightarrow \angle 1 = 180^\circ - 65^\circ - 65^\circ = 50^\circ$

(2) $\angle 2 = 180^\circ - 50^\circ = 130^\circ$

(3) $\angle EFC' = \angle EFC$

$= 180^\circ - 65^\circ = 115^\circ$

$\angle GFC' = 115^\circ - 65^\circ = 50^\circ$



9. 如圖, 長方形 $ABCD$ 沿對角線 $\overline{AC}$ 摺疊, D 點落在 D' 點上, 若 $\angle ACD = 60^\circ$, $\overline{AB} = 2\sqrt{3}$, $\overline{AD} = 6$, 求 (1) $\angle PCA$

(2) $\angle PAC$ (3) $\angle PCD'$ (4) $\overline{PC}$

(1) $\angle PCA = 90^\circ - 60^\circ = 30^\circ$

(2) $\angle PAC = \angle DAC = 30^\circ$

(3) $\angle ACD' = \angle ACD = 60^\circ$

$\Rightarrow \angle PCD' = 60^\circ - 30^\circ = 30^\circ$

(4) $\therefore \triangle APC$ 為等腰 $\triangle$

$\therefore \text{設 } \overline{PA} = \overline{PC} = x$

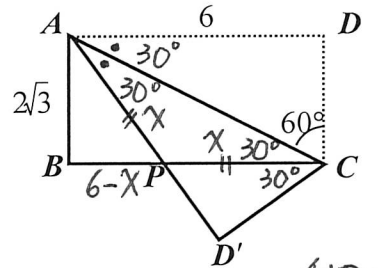
$\Rightarrow \overline{PB} = 6 - x$

$(2\sqrt{3})^2 + (6-x)^2 = x^2$

$12 + 36 - 12x + x^2 = x^2$

$\Rightarrow \overline{PC} = 4$

$x = 4 \Rightarrow \overline{PC} = 4$



10. 如圖, T, N 分別為截線, 若 $\angle 1 = \angle 2$ 且

$\angle 3 = (7x + 13)^\circ$, $\angle 4 = (9x - 25)^\circ$,

求 (1) $x = ?$ (2) $\angle 4 = ?$

(1) $\therefore \angle 1 = \angle 2$

$\therefore L \parallel M$

$7x + 13 + 9x - 25 = 180$

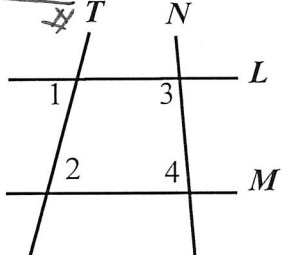
$16x = 192$

$x = 12$

(2)

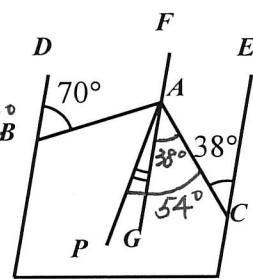
$\angle 4 = (9 \times 12 - 25)^\circ$

$= 83^\circ$



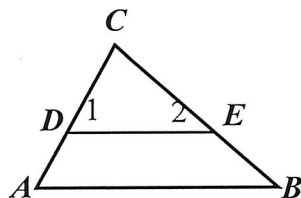
11. 如圖， $\overline{DB} \parallel \overline{FG} \parallel \overline{EC}$ ， $\angle ABD = 70^\circ$ ， $\angle ACE = 38^\circ$ ， $\overline{AP}$ 是 $\angle BAC$ 的分角線，求 $\angle PAG = ?$

$\because \overline{FG} \parallel \overline{EC}$ $\therefore \overline{AP}$ 平分 $\angle BAC$
 $\therefore \angle CAG = \angle ACE = 38^\circ$
 $\therefore \angle CAP = \frac{108^\circ}{2} = 54^\circ$
 $\Rightarrow \angle PAG = 54^\circ - 38^\circ = 16^\circ$
 $\therefore \angle BAC = 38^\circ + 10^\circ = 108^\circ$



12. 如圖， $\angle 1 = \angle A$ ， $\angle 2 = \frac{2}{3}\angle 1 = \frac{1}{2}\angle C$ ，求 $\angle B$

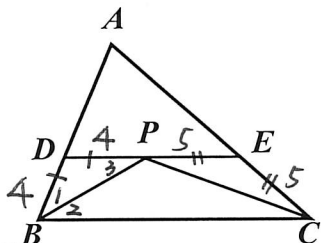
設 $\angle 2 = x^\circ$
 $\frac{2}{3}\angle 1 = x^\circ \Rightarrow \angle 1 = \frac{3}{2}x^\circ$
 $\frac{1}{2}\angle C = x^\circ \Rightarrow \angle C = 2x^\circ$
 $2x + \frac{3}{2}x + x = 180$
 $\frac{9}{2}x = 180$
 $x = 40$



$\therefore \angle 1 = \angle A$
 $\therefore \overline{DE} \parallel \overline{AB}$
 $\Rightarrow \angle B = \angle 2 = 40^\circ$

13. 如圖， $\overline{BP}$ 平分 $\angle ABC$ ， $\overline{CP}$ 平分 $\angle ACB$ ，過 P 點作 $\overline{BC}$ 的平行線交 $\overline{AB}$ 、 $\overline{AC}$ 於 D 、 E

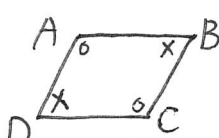
(1) 若 $\overline{DB} = 4$ ， $\overline{CE} = 5$ ，則 $\overline{DE} = ?$
 (2) 若 $\overline{AB} = 10$ ， $\overline{AC} = 13$ ，則 $\triangle ADE$ 的周長 = ?



(1) $\because \overline{DE} \parallel \overline{BC}$ 同理 $\overline{EP} = \overline{EC} = 5$
 $\therefore \angle 2 = \angle 3$
 又 $\angle 1 = \angle 2 \Rightarrow \overline{DE} = 4 + 5 = 9$
 $\Rightarrow \angle 1 = \angle 3$
 $\Rightarrow \overline{DP} = \overline{DB} = 4$
 (2) $\triangle ADE$ 周長 $= \overline{AD} + \overline{DE} + \overline{AE}$
 $= \overline{AD} + \overline{DP} + \overline{PE} + \overline{AE}$
 $= \overline{AB} + \overline{AC} = 10 + 13 = 23$

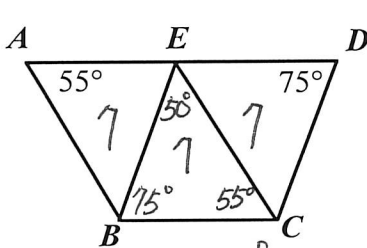
14. 平行四邊形 $ABCD$ 中， $\angle C = (8x + 17)^\circ$ ， $\angle D = (7x - 2)^\circ$ ，求 $\angle A$ 、 $\angle B$

$\therefore \angle C + \angle D = 180^\circ$
 $\therefore 8x + 17 + 7x - 2 = 180$
 $15x = 165$
 $x = 11$
 $\angle A = \angle C = (8 \times 11 + 17)^\circ = 105^\circ$
 $\angle B = \angle D = (7 \times 11 - 2)^\circ = 75^\circ$



15. 如右圖，四邊形 $ABCD$ 中， E 點在 $\overline{AD}$ 上， $\angle A = 55^\circ$ ， $\angle D = 75^\circ$ ， $\triangle ABE$ 的面積為 7，且四邊形 $ABCE$ 與 $BCDE$ 皆為平行四邊形。求：

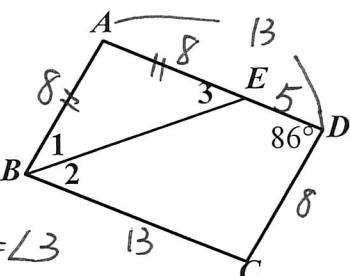
(1) 四邊形 $ABCD$ 的面積
 (2) $\angle BEC$
 (1) $\because ABCE$ 為 $\square$
 $\therefore \triangle CEB$ 面 $= \triangle ABC$ 面 $= 7$
 $\because BCDE$ 為 $\square$
 $\therefore \triangle ECD$ 面 $= \triangle CEB$ 面 $= 7$
 $\Rightarrow 7 + 7 + 7 = 21$



(2) $\angle ECB = \angle A = 55^\circ$
 $\angle EBC = \angle D = 75^\circ$
 $\Rightarrow \angle BEC = 180^\circ - 55^\circ - 75^\circ = 50^\circ$

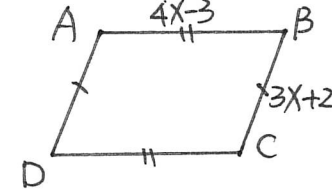
16. 如右圖，平行四邊形 $ABCD$ 中， E 點在 $\overline{AD}$ 上， $\overline{AB} = 8$ ， $\overline{BC} = 13$ ， $\angle D = 86^\circ$ ，且 $\angle 1 = \angle 2$ 。求：

(1) $\angle 3$ (2) $\overline{DE}$ 的長
 (1) $\because \overline{AD} \parallel \overline{BC} \Rightarrow \angle 3 = \frac{86^\circ}{2} = 43^\circ$
 $\therefore \angle 2 = \angle 3$
 又 $\angle 1 = \angle 2 \Rightarrow \angle 1 = \angle 3$
 又 $\angle ABC = \angle D = 86^\circ \therefore \overline{AE} = \overline{AB} = 8$
 $\overline{DE} = 13 - 8 = 5$



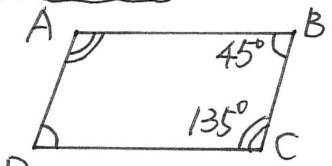
17. 平行四邊形 $ABCD$ 中， $\overline{AB} = (4x - 3)$ ， $\overline{BC} = (3x + 2)$ ，周長為 96，求 $\overline{CD} = ?$

$(4x - 3 + 3x + 2) \times 2 = 96$
 $7x - 1 = 48$
 $7x = 49$
 $x = 7$
 $\overline{CD} = \overline{AB} = 4 \times 7 - 3 = 25$



18. 平行四邊形 $ABCD$ 中， $\angle B$ 的 3 倍與 $\angle D$ 互補，求 $\angle C$

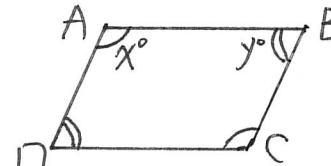
設 $\angle B = \angle D = x^\circ$
 $3x + x = 180$
 $4x = 180$
 $x = 45$
 $\Rightarrow \angle B = 45^\circ$



$\angle C = 180^\circ - 45^\circ = 135^\circ$

19. 平行四邊形 $ABCD$ 中， $\angle A$ 的 2 倍比 $\angle B$ 的 3 倍多 85° ，求 $\angle C$ 、 $\angle D$

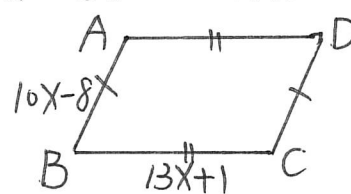
設 $\angle A = x^\circ$ ， $\angle B = y^\circ$
 $\begin{cases} 2x - 3y = 85 \\ x + y = 180 \end{cases}$
 $\Rightarrow x = 125, y = 55$



$\angle C = \angle A = 125^\circ$
 $\angle D = \angle B = 55^\circ$

20. 平行四邊形 $ABCD$ 中， $\overline{AB} = (10x - 8)$ ， $\overline{BC} = (13x + 1)$ ，且 $\overline{CD}$ 和 $\overline{AD}$ 的差為 18，求平行四邊形 $ABCD$ 周長

$\overline{AD} = \overline{BC} = 13x + 1$
 $\overline{CD} = \overline{AB} = 10x - 8$
 $\Rightarrow (13x + 1) - (10x - 8) = 18$
 $3x + 9 = 18$
 $3x = 9, x = 3$
 $\overline{AD} = \overline{BC} = 40$
 $\overline{CD} = \overline{AB} = 22$
 $\Rightarrow (40 + 22) \times 2 = 124$



21. 平行四邊形 $ABCD$ 中， $\overline{AB}$ 比 $\overline{BC}$ 多 13， $\overline{CD}$ 是 $\overline{AD}$ 的 3.6 倍，求 $\overline{CD} = ?$

設 $\overline{BC} = x$ ， $\overline{AB} = x + 13$
 $\therefore \overline{CD} = \overline{AB} = x + 13$
 $\overline{AD} = \overline{BC} = x$
 $\therefore x + 13 = 3.6x$
 $2.6x = 13$
 $x = 5$
 $\Rightarrow \overline{CD} = 5 + 13 = 18$

