TB(1B) Ch. 11 Angles related to lines
Conventional Questions

1. [11-12 Final Exam #6]

In **Figure 2**, $\angle B = 124°$, $\angle C = 4x$, reflex $\angle E = 236°$, $AB // CD$ and $BC // DE$.

(a) Find the value of x.   **(2 marks)**

(b) Prove $CD // EF$.   **(4 marks)**

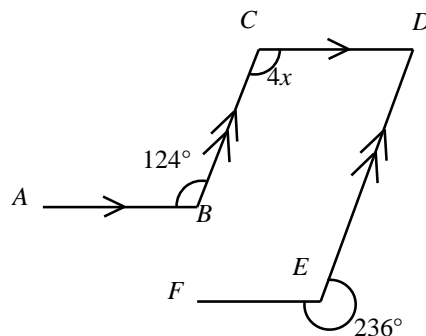**Figure 2**

2. [12-13 Standardised Test 2, #5]

In **Figure 3**, $\angle AOB = 58°$, $\angle BOC = x + 42°$, $\angle DOE = 2x$, $\angle AOE = 2\angle DOE$ and

$$\angle DOE = \frac{1}{3}\angle COD.$$

(a) Find the value of x.   **(3 marks)**

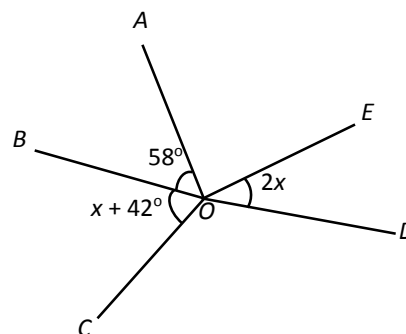**(b)** Is BOD a straight line? Explain briefly.   **(2 marks)**

Figure 3

3. [12-13 Standardised Test 2, #6]

In **Figure 4**, ABC is a triangle and AG intersects BC at D. $\angle B = 35°$ and $\angle BDG = 85°$. E and F are points on AB and AC respectively such that $DE \perp AB$ and $DF \perp AC$. If DF bisects $\angle ADC$,

(a) find the values of x, y and z.   **(5 marks)**

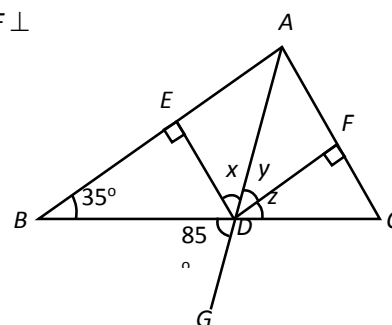**(b)** write down the type of $\triangle ABC$ according to the sizes of its angles.

     (1 mark)

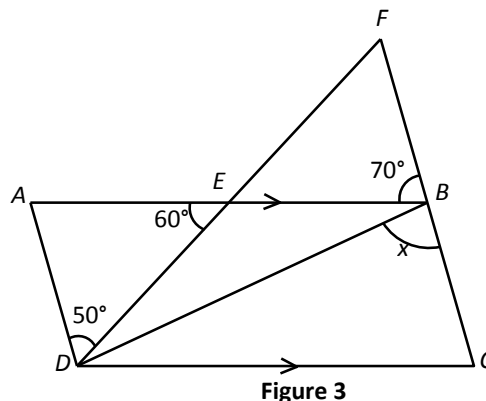**Figure 4**

4.   **[12-13 Final Exam, #6]**

In **Figure 3**, *AEB*, *DEF* and *CBF* are straight lines. *AB* // *DC*, $\angle ADE = 50°$, $\angle AED = 60°$, $\angle EBF = 70°$ and $\angle BDE = \angle BDC$.

(a)   Prove that *AD* // *FC*.   **(2 marks)**

(b)   Find *x*.   **(2 marks)**

Figure 3

5.   **[13-14 Standardised Test 2, #5]**

In **Figure 4**, *AB* // *DE*, $\angle BAC = 56°$ and $\angle ACB = \angle BDE = 36°$. Find $\angle CBD$.   **(3 marks)**
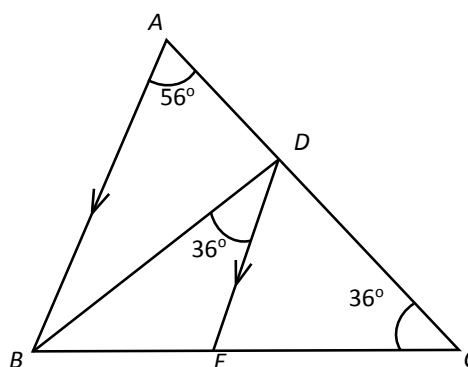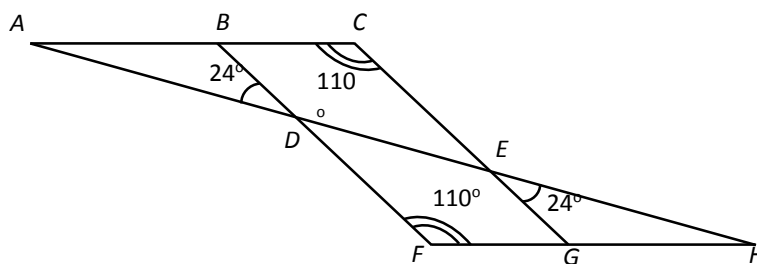
Figure 4

6.   **[13-14 Standardised Test 2, #6]**

In **Figure 5**, *ABC*, *FGH*, *BDF*, *CEG* and *ADEH* are straight lines. $\angle ADB = \angle GEH = 24°$ and $\angle ACG = \angle BFH = 110°$.

(a)   Prove that *BF* // *CG*.   **(2 marks)**

(b)   Prove that *AC* // *FH*.   **(2 marks)**

Figure 5

7. [13-14 Standardised Test 2, #8]

In **Figure 7**, *ABCDEFGHI* is a 9-sided polygon.

ABGHI is a pentagon, *BCDEFG* is a hexagon and *BG // IH*.

(a) Find *x* and *y*.   **(4 marks)**

(b) Prove that *BC // GF*.   **(2 marks)**
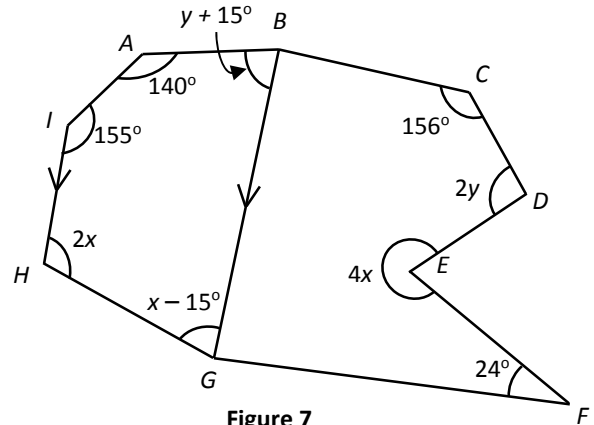
Figure 7

8. [13-14 Final Exam, #7]

Figure 3 shows a hexagon *ABCDEF*.

(a) Find *a*.   **(2 marks)**

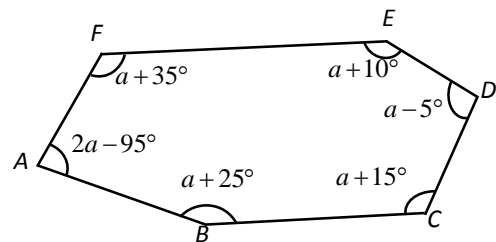**(b)** Is *FE* parallel to *BC*? Explain your answer.   **(3 marks)**

Figure 3

9. [14-15 Standardized Test #7]

In **Figure 4**, $\angle ABC = 35^\circ$ and $\angle GDE = 145^\circ$. *CDE* and *FDG* are straight lines and *AB//CE*.

(a) Prove that *BC// FG*.   **(3 marks)**

(b) If ΔDCG is an obtuse-angled triangle, find a set of possible value for $\angle GCD$ and $\angle CGD$. Explain your answer.   **(2 marks)**
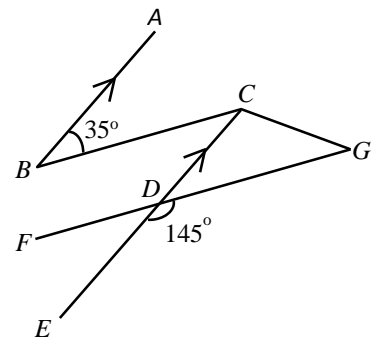

Figure 4

10. [14-15 Final Exam #5]

In **Figure 2**, *ABCD* is a quadrilateral with *AB //DC*. *DC* is produced to *E*. *AC* and *BD* intersect at *F*. It is given that $\angle ABF = a + 4^\circ$, $\angle ADF = a$, $\angle DFC = 2a + 16^\circ$, $\angle FCB = 46^\circ$ and $\angle BCE = 64^\circ$.

(a) Find *a*.   **(2 marks)**

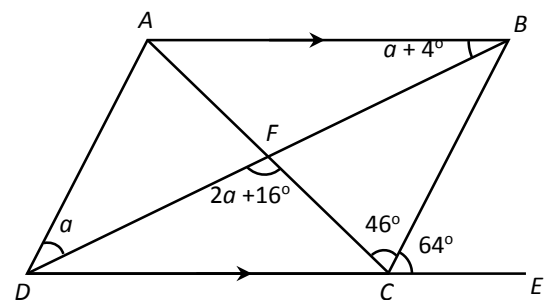**(b)** Prove that *AD // BC*.   **(2 marks)**

Figure 2

11. **[14-15 Final Exam #6]**

In **Figure 3**, *ABIJK*, *BCD*, *CEF* and *GHI* are straight lines. Find *a* and *b*. **(4 marks)**
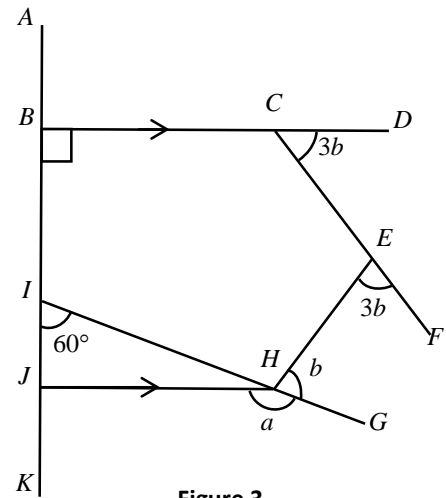

Figure 3

12. **[15-16 Final Exam, #8]**

An *n*-sided convex polygon is given.

(a) Express the sum of interior angles of the polygon in terms of *n*. **(1 mark)**

(b) It is known that one of the interior angles of this polygon is *x* and the sum of all the other interior angles is 1000°.

(i) Write down the sum of interior angles of this polygon in terms of *x*. **(1 mark)**

(ii) Show that $x = 180^\circ n - 1360^\circ$. **(1 mark)**

(iii) It is known that $x < 180^\circ$. Write down the value of *n*. **(1 mark)**

~ End ~