TB(1B) Ch. 9 Congruence and Similarity
Conventional Questions

1. [13-14 Final Exam, Q2]

In **Figure 2**, $\angle Q = 55°$, $\angle R = 67°$, $\angle Y = 58°$, $PQ = YX$ and $PR = YZ$. Prove that $\Delta PQR \cong \Delta YXZ$. **(3 marks)**

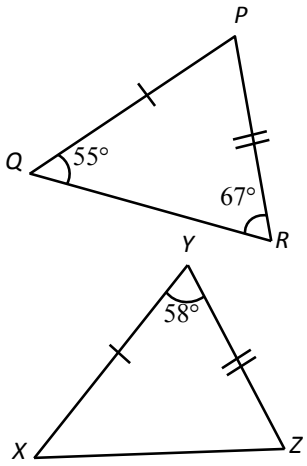


Figure 2

2. [13-14 Final Exam, Q8]

In **Figure 4**, $AB = 5$ cm, $BC = 1$ cm, $AE = 3$ cm and $ED = 7$ cm.

(a) Prove that $\Delta ABE \sim \Delta ADC$. **(3 marks)**

(b) If $BE = (x + 1)$ cm and $DC = (5x - 7)$ cm, find the length of BE. **(2 marks)**

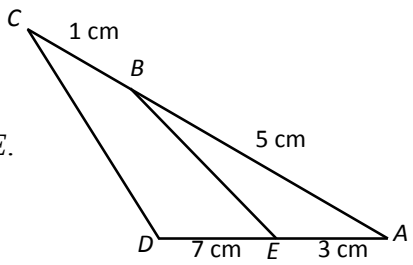


Figure 4

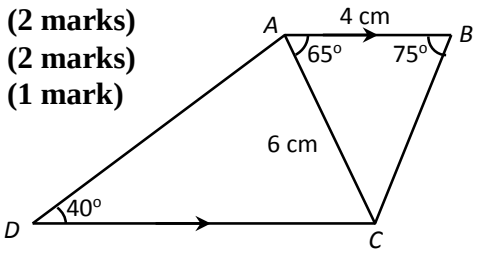
3. [14-15 Final Exam, Q4]

In **Figure 1**, it is given that AB // DC, $\angle ADC = 40°$, $\angle BAC = 65°$ and $\angle ABC = 75°$. $AB = 4$ cm and $AC = 6$ cm.

(a) Find $\angle DAC$ and $\angle ACD$. **(2 marks)**

(b) Prove that $\Delta ADC \sim \Delta BCA$. **(2 marks)**

(c) Find the length of DC. **(1 mark)**



4. [14-15 Final Exam, Q12]

In **Figure 6(a)**, $AOBC$ is a square. D is a point on AC and E is a point on CB produced such that $\angle DOE = 90^o$. Let $\angle AOD = a$.

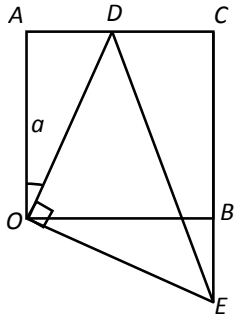


Figure 6(a)

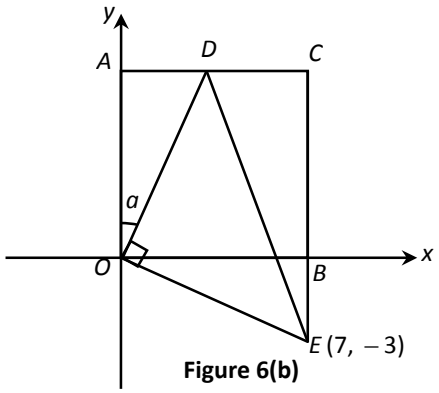


Figure 6(b)

(a) Prove that $\Delta DAO \cong \Delta EBO$. **(3 marks)**

(b) A rectangular coordinate system is introduced to **Figure 6(a)** such that O is the origin and the coordinates of E are $(7, -3)$ as shown in **Figure 6(b)**. Find the area of ΔDOE. **(2 marks)**

5. [15-16 Final Exam #9]

In **Figure 4**, $BCDE$ is a straight line, $\angle ABC = 54^o$, $\angle CAD = 36^o$ and $\angle ADF = 54^o$. It is known that $\angle ACD = \angle ADC$.

(a) Find $\angle ADC$. **(1 mark)**

(b) Prove that AB // FD. **(2 marks)**

(c) It is given that AF // BE. Show that

$\Delta ABD \cong \Delta DFA$. **(2 marks)**

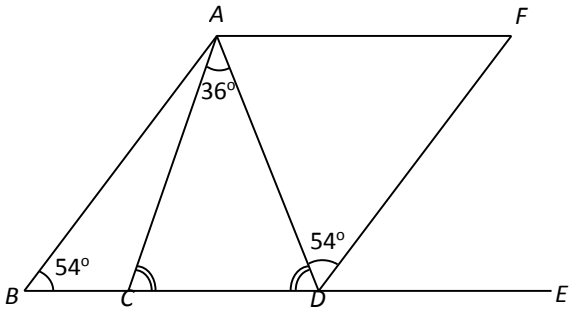


Figure 4

6. [15-16 Final Exam #10]

In **Figure 5**, ABC, AMF, DEF and BME are straight lines. AC // DF, $AB = 4$ cm, $BM = 3$ cm, $AM = 5$ cm, $MF = 10$ cm. It is given that $\angle DAF = 90^o$, $\angle BEF = 90^o$ and $\angle BAM = 37^o$

(a) Prove that $\Delta ABM \sim \Delta FEM$. **(2 marks)**

(b) Name another triangle which is similar to the two triangles in **(a)**. **(1 mark)**

(c) Find the length of DE. **(3 marks)**

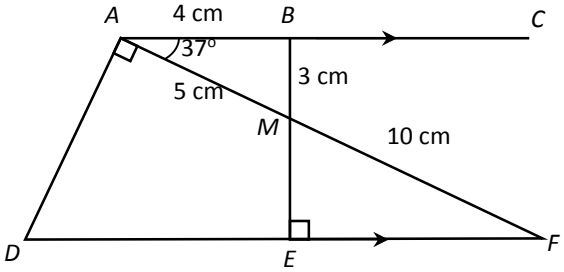


Figure 5

7. [16-17 Final Exam #10]

In **Figure 3**, DEC is a straight line and AB // DC. It is given that $\angle BAE = 55^o$, $\angle CBE = 46^o$, $\angle BCE = 72^o$ and $\angle ADE = 62^o$.

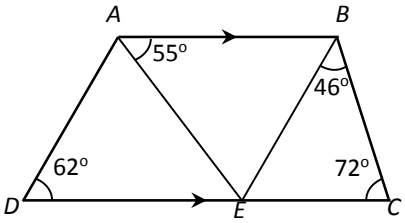


Figure 3

(a) Find $\angle ABE$ and $\angle AED$. **(2 marks)**

(b) Prove that $\Delta ABE \cong \Delta EDA$. **(2 marks)**

(c) Prove that AD // BE. **(2 marks)**

8. [16-17 Final Exam #11]

In **Figure 4(a)**, PS and QR intersect at T. It is given that $PT = 8$ cm, $QT = TR = 12$ cm and $TS = 18$ cm.

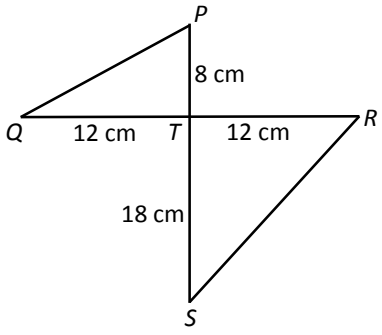


Figure 4(a)

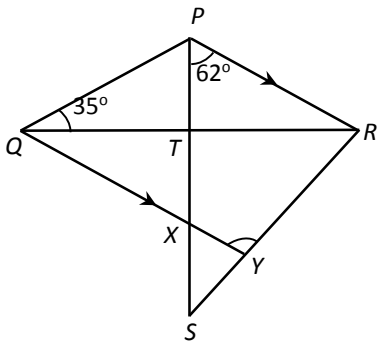


Figure 4(b)

(a) Prove that $\Delta PQT \sim \Delta RST$. **(2 marks)**

(b) **Figure 4(b)** is obtained by joining PR in **Figure 4(a)**. Y is a point on RS so that PR // QY. QY cuts TS at X. It is given that $\angle PQT = 35^o$ and $\angle RPS = 62^o$. Find $\angle QYR$. **(2 marks)**

9. [17-18 Final Exam #2]

In **Figure 2**, ADB, AEC, BFE and CFD are straight lines. It is given that $\Delta ABE \cong \Delta ACD$, $\angle CAD = 35°$, $\angle ACD = 25°$, $BD = 4$ cm and $AE = AD = 5$ cm.

(a) Find $\angle AEB$. **(2 marks)**

(b) Prove that $\Delta DBF \cong \Delta ECF$. **(2 marks)**

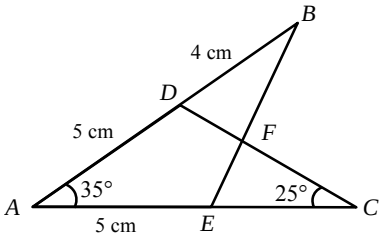
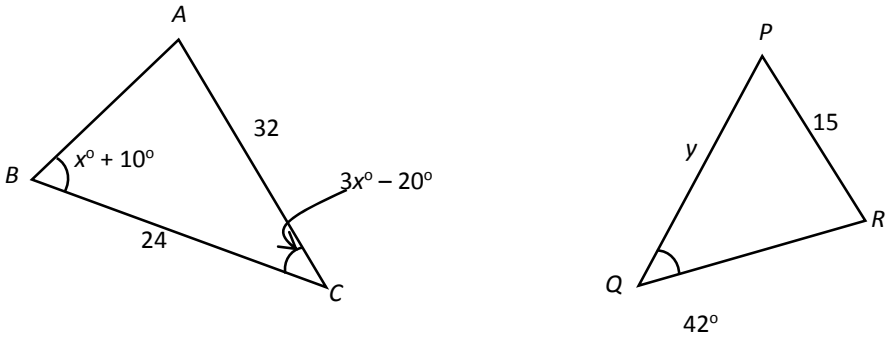


Figure 2

10. [17-18 Final Exam #7]

In **Figure 4**, it is given that $\Delta ABC \sim \Delta QRP$. Find x and y. **(4 marks)**



11. [17-18 Final Exam #15]

In **Figure 11(a)**, it is given that ΔABC and ΔPQR are similar triangles with $AB = 8$, $AC = 12$, $PQ = 6$, $PR = 9$ and $\angle A = \angle P$.

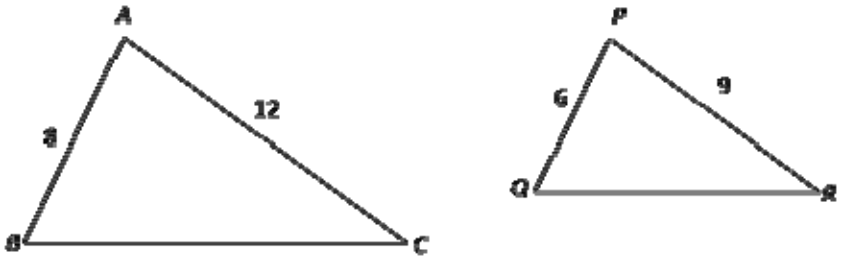


Figure 11(a)

In **Figure 11(b)**, the upper part of ΔABC and ΔPQR are removed so that the two similar triangles become two trapeziums $BCDE$ and $QRST$.

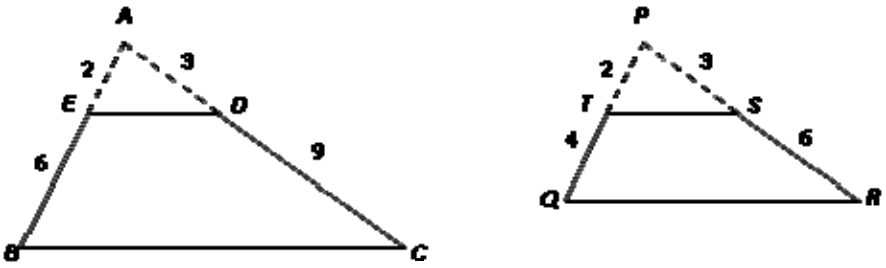


Figure 11(b)

Velvet claims that the two trapeziums $BCDE$ and $QRST$ are similar. Do you agree? Explain briefly. **(2 marks)**

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