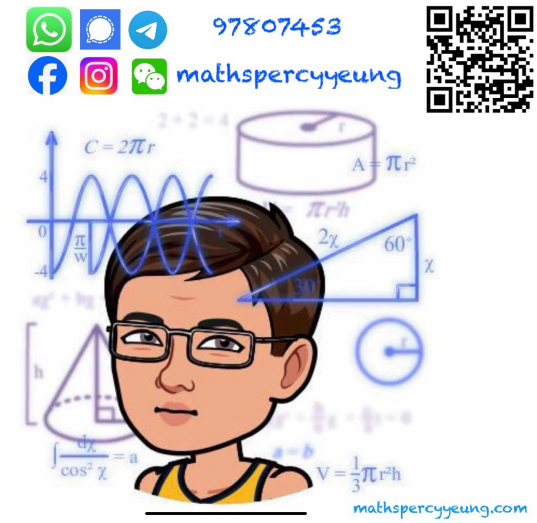
S1



Mathematics

Past Exam Paper (1314–2223)

Question Book

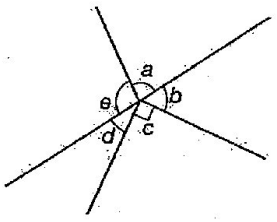
Ch 8 Angles related to Straight Lines and Triangles

UCCKE F1 Ch8 Angles related to Straight Lines and Triangles

Ch8. Angles related to Straight Lines and Triangles

[1314 S.1 2nd Exam MC Q8]

1. In the figure below, which of the following statements must be correct?



A. $a+e=180°$

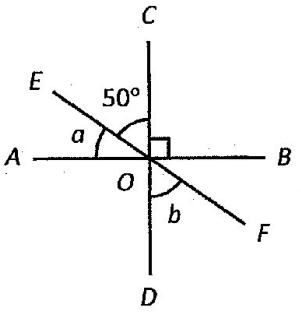
B. $a+b+c+d+e=360°$

C. $b=e$

D. $a=90°$

[1314 S.1 2nd Exam SQ Q5]

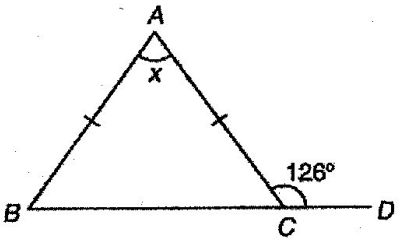
2. In the figure, AOB, COD and EOF are straight lines. $AB \perp CD$ and $\angle COE = 50°$. Find the unknowns. Fill in the blanks. (2 marks)



Calculation:	***Reason:***
$a + 50° + (\quad)° = 180°$	( )
$a = \underline{\underline{40°}}$	/
$b = \underline{\underline{(\quad)°}}$	( )

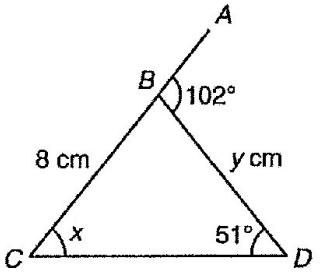
[1314 S.2 1st Exam SQ Q5]

3. Find the value of x in the figure. (4 marks)



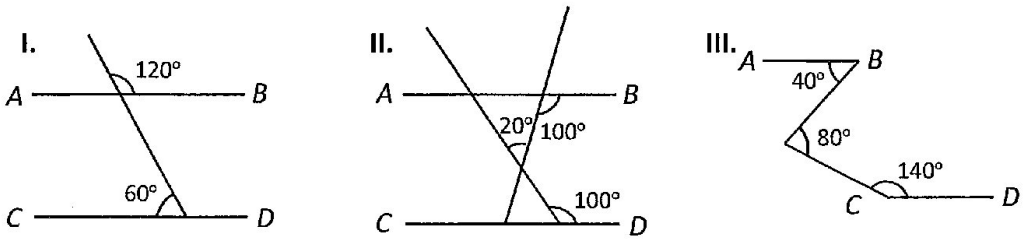
[1314 S.2 1st Exam SQ Q6]

4. In the figure, ABC is a straight line. Find the values of x and y.
(4 marks)



[1314 S.2 2nd Exam MC Q8]

5. In which of the following figures, AB must be parallel to CD?



A. I and II only

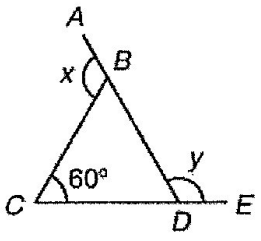
B. I and III only

C. II and III only

D. I, II and III

[1415 S.2 1st Exam MC Q7]

6. Referring to the figure, which of the following is NOT a possible pair of x and y?



A. $x = 91°, y = 149°$

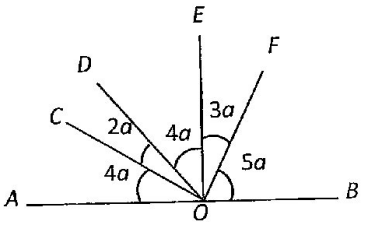
B. $x = 100°, y = 140°$

C. $x = 129°, y = 101°$

D. $x = 175°, y = 65°$

[1415 S.2 2nd Exam MC Q9]

7. In the figure, AOB is a straight line. Which of the following must be true?



I. $EO \perp OB$
II. $FO \perp OC$
III. $EO \perp OA$

A. II only
B. I and II only
C. I and III only
D. I, II and III

[1516 S.1 2nd Exam MC Q9]

8. In Figure 3, AOB and COD are straight lines. Which of the following angles must have the same size as x?

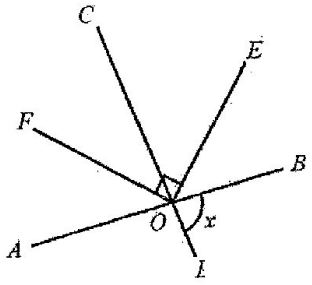


Figure 3

A. $\angle AOC$
B. $\angle FOE$
C. $\angle AOD$
D. $\angle BOC$

[1516 S.1 2nd Exam SQ Q9]

9. In Figure 9, AOB and COD are straight lines. Find x and y. (3 marks)

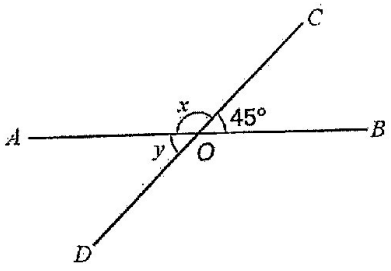


Figure 9

[1516 S.2 1st SQ Q10]

10. In figure 3, BCD is a straight line and $AB = BC = CA$. Find x. (4 marks)

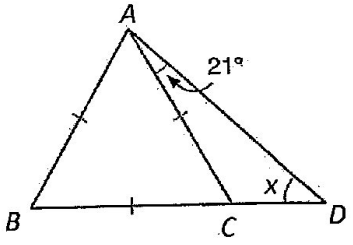
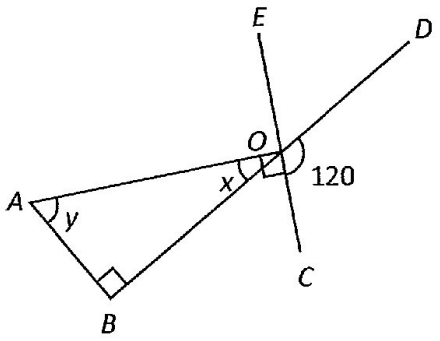


Figure 3

[1617 S.1 2nd Exam SQ Q18]

11. In the figure, BOD and COE are straight lines. $\angle ABO$ and $\angle AOC$ are right angles.

    Find the values of x and y. (3 marks)



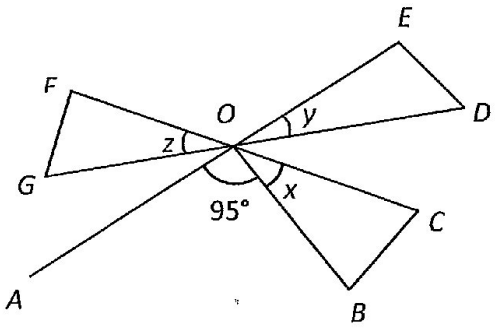
[1617 S.1 2nd Exam Enhanced Question Q22]

12. In the figure, AOE, FOC and GOD are straight lines.

    (a) (i) Write down $\angle FOE$ in terms of x.

    (ii) Hence, or otherwise, find the value of $x+y+z$.

    (b) Find $\angle B+\angle C+\angle D+\angle E+\angle F+\angle G$. (5 marks)



[1617 S.2 2nd Exam MC Q7]

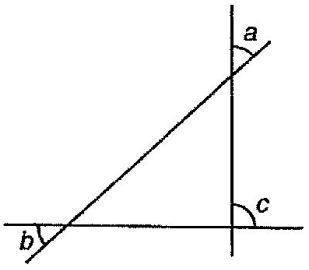
13. In the figure, which of the following MUST be correct?

    A. $a+b+c=180°$

    B. $a=b$

    C. $a+b=c$

    D. $c=90°$



[1718 S.1 2nd Exam MC Q4]

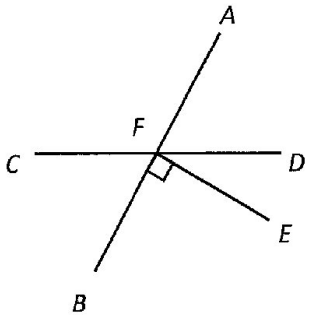
14. In the figure, straight lines AB and CD intersect at F. Which of the following must **NOT** be correct?

    A. $\angle AFD=\angle CFB$

    B. $\angle DFE=90°-\angle AFD$

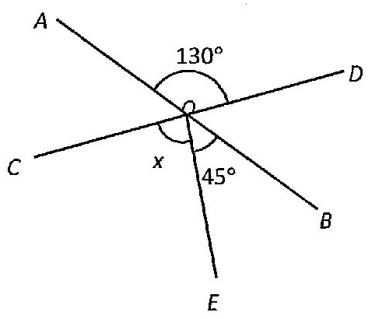
    C. $\angle CFE+\angle EFA+\angle AFC=360°$

    D. $\angle AFC<\angle DFB$



[1718 S.1 2nd Exam FQ Q15]

15. In the figure, straight lines AB and CD intersect at O. The calculation steps of finding the value of x are shown below. Fill in the blank with correct reason. (1 mark)

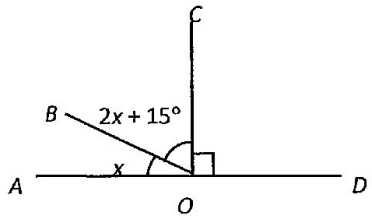


$x + 45° = 130°$ (_____)

$x = \underline{\underline{85°}}$

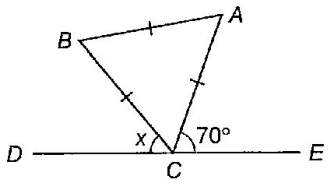
[1718 S.1 2nd Exam FQ Q16]

16. In the figure, AOD is a straight line. Find the value of x. (Please include appropriate reasons in the working steps.) (2 marks)



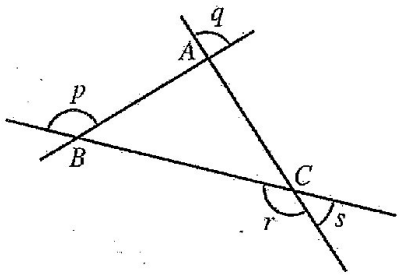
[1718 S.2 2nd Exam FQ Q17]

17. In the figure, DCE is a straight line. $AB = BC = CA$ and $\angle ACE = 70°$. Find x. (3 marks)



[1819 S.2 2nd Exam MC Q7]

18. Which of the following about the figure are NOT true?



I. $p+q+r=360°$

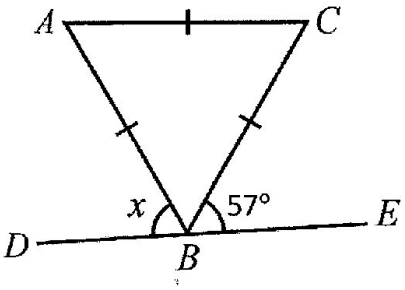
II. $q+s=p$

III. $AB=AC$

A. I and II only
B. I and III only
C. II and III only
D. I, II and III

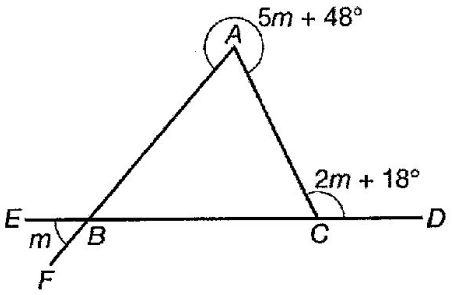
[1819 S.2 2nd Exam BQ Q16]

19. In the figure, DBE is a straight line. Find x. (3 marks)



[1920 S.1 Exam MC Q18]

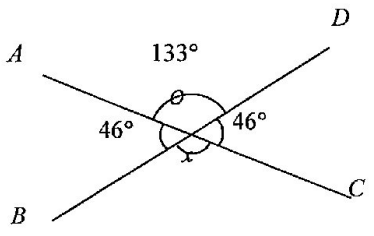
20. In the figure, ABF and $EBCD$ are straight lines. Find $\angle BAC$.



A. 49°
B. 57°
C. 63°
D. 67°

[2021 S.1 WSUT MC Q9]

21. In the figure, find x.



A. 133°
B. 134°
C. 135°
D. 136°

[2021 S.1 WSUT MC Q10]

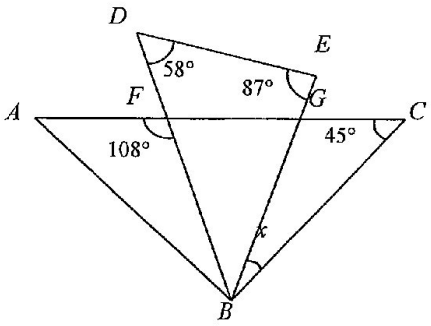
22. In the figure, AC cuts BD and BE at points F and G respectively. Find x.

A. 28°

B. 35°

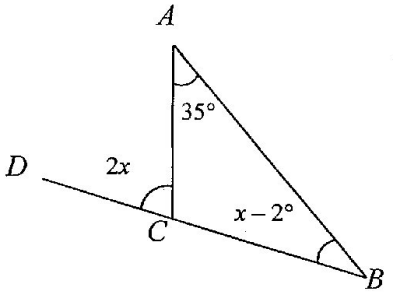
C. 42°

D. 63°



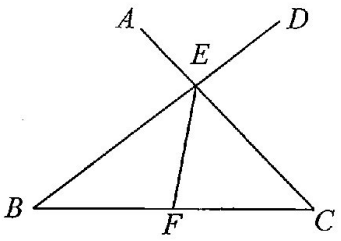
[2021 S.1 WSUT BQ Q15]

23. In the figure, BCD is a straight line. Find x. (3 marks)



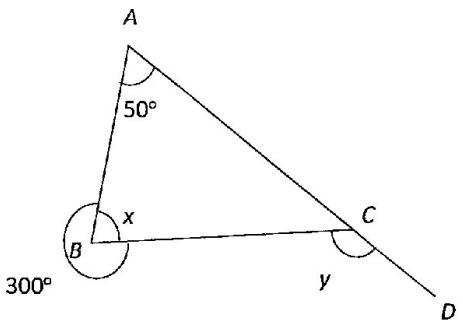
[2021 S.1 WSUT IQ Q19]

24. In the figure, AC and BD intersect at point E. F is a point lying on BC. It is given that $\angle EBC = 40°$, $\angle AEF = 124°$ and $\angle DEF = 143°$. Find $\angle ECB$. (4 marks)



[2021 S.1 Final Exam BQ Q6]

25. In the figure, ACD is a straight line. $\angle BAC = 50°$ and reflex $\angle ABC = 300°$. Let $\angle ABC = x$ and $\angle BCD = y$. Find x and y. (2 marks)

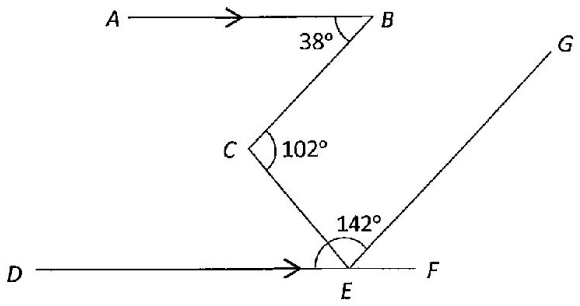


[2021 S.1 Final Exam IQ Q13]

26. In the figure, AB // DEF. C is a point such that $\angle BCE = 102°$ and G is point such that $\angle DEG = 142°$.

(a) Prove that BC // GE.

(b) Hence, find $\angle CEG$. (3 marks)



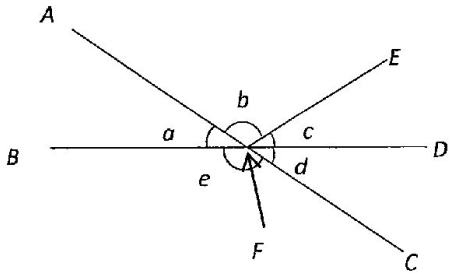
[2021 S.1 Final Exam MC Q9]

27. In the figure, AC and BD intersects at F. Which of the following must be true?

I. $b + c + d = 180°$

II. $a = d$

III. $b = e$



A. I and II only

B. I and III only

C. II and III only

D. I, II and III

[2021 S.1 Final Exam MC Q10]

28. Which of the following statements is correct?

A. If $\angle A + \angle B = 90°$, then they are supplementary angles.

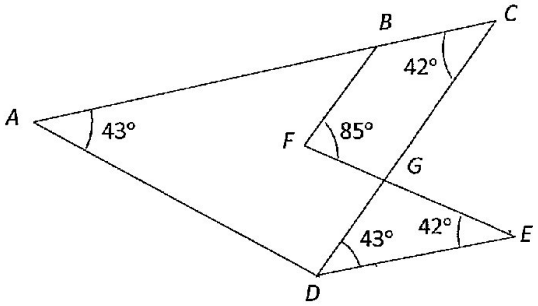
B. An octagon has 10 sides

C. All interior angles are obtuse in an obtuse-angled triangle.

D. A regular polygon must be equiangular.

[2021 S.1 Final Exam MC Q12]

29. In the figure, ACD is a triangle with $\angle CAD = 43°$ and $\angle ACD = 42°$. EF intersects CD at G with $\angle GED = 42°$ and $\angle EDG = 43°$. B is a point on AC such that $\angle BFE = 85°$. Which of the following must be true?



I. $AC // DE$

II. $BF // CD$

III. $AD // FE$

A. I only

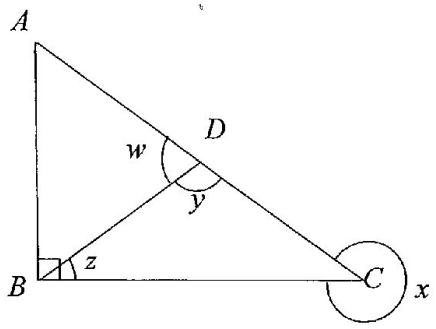
B. II only

C. I and III only

D. II and III only

[2122 S.1 WSUT MC Q3]

30. A right-angled triangle ABC is shown in the following figure, where D is a point on AC. Four angles are labelled as w, x, y and z as shown. Which of the following statements must be true?



A. $w > z$

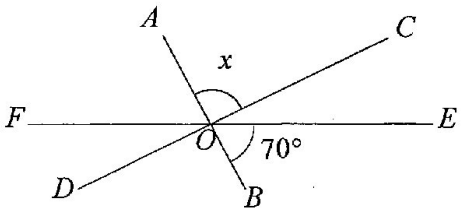
B. x is an obtuse angle

C. y is a reflex angle

D. z is an acute angle

[2122 S.1 WSUT MC Q4]

31. In this figure, AB, CD, and EF are straight lines intersecting at O. It is known that $x = \angle AOC = 4\angle DOF$ and $\angle EOB = 70°$. Find the value of x.



A. 86°

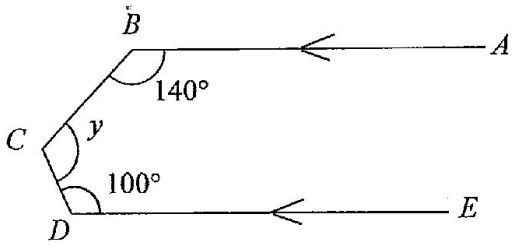
B. 88°

C. 90°

D. 92°

[2122 S.1 WSUT MC Q9]

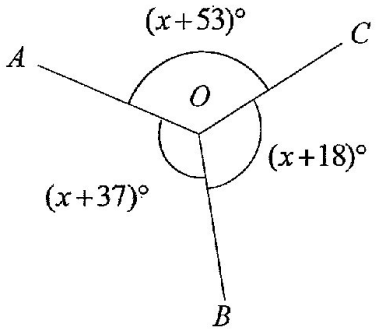
32. In the figure, *AB//ED*. Find *y*.



A. 160°
B. 140°
C. 120°
D. 100°

[2122 S.1 WSUT BQ Q15]

33. Refer to the following figure.

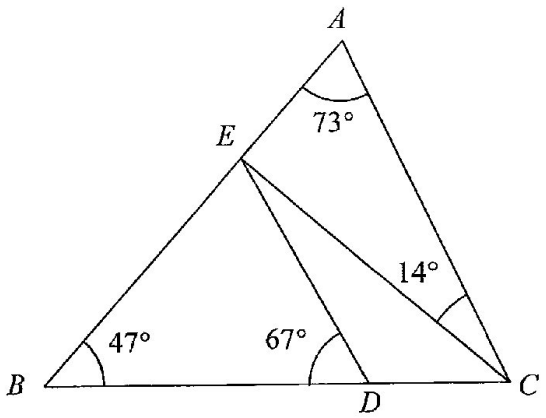


(a) Find the value of *x*. (2 marks)

(b) Hence, write down the value of greatest angle in the above figure. (1 mark)

[2122 S.1 WSUT IQ Q18]

34. In the figure, *ABC* is a triangle, and *E* and *D* are points on *AB* and *BC* respectively. It is given that $\angle ABC = 47°$, $\angle BAC = 73°$, $\angle ACE = 14°$ and $\angle BDE = 67°$.



(a) Find $\angle ECD$. (2 marks)

(b) Find $\angle DEC$. (2 marks)

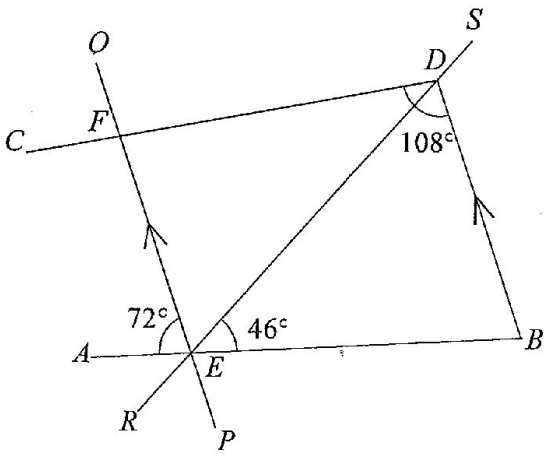
[2122 S.1 WSUT AQ Q21]

35. In this figure, AB and CD are two straight lines. The straight line PQ cuts AB and CD at E and F respectively, such that $PQ//BD$. The straight line RS passes through points E and D. It is given that $\angle DEB = 46°$, $\angle AEF = 72°$ and $\angle FDB = 108°$.

(a) Let $\angle EDF = x$. Find the value of x. (3 marks)

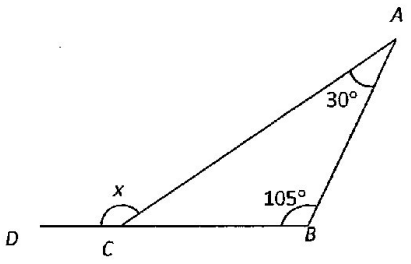
(b) H is a point lying between D and F, and K is a point lying between D and E. Angus claims that it is impossible to draw a line HK such that $HK // AB$. Do you agree? Explain briefly.

(2 marks)



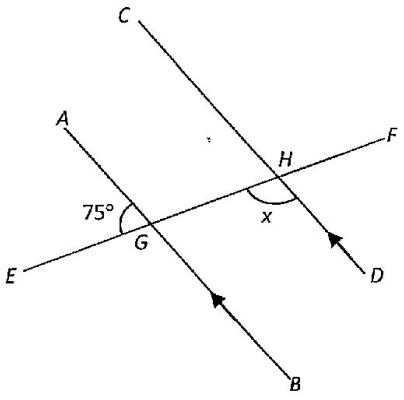
[2122 S.1 Final Exam BQ Q6]

36. In the figure, BCD is a straight line. Find x. (2 marks)



[2122 S.1 Final Exam BQ Q13]

37. In the figure, *EF* cuts *AB* and *CD* at points *G* and *H* respectively. It is given that *BA* // *DC*. Find *x*. (3 marks)



[2122 S.1 Final Exam MC Q7]

38. If $\angle A$ is greater than 180° but less than 360°, then it is

A. an acute angle.

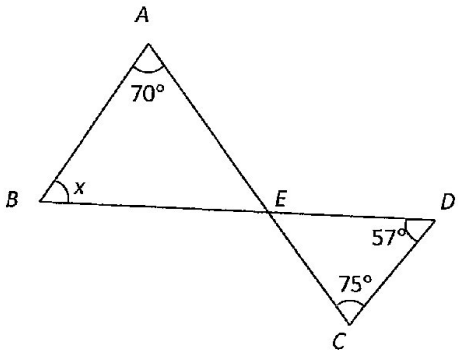
B. an obtuse angle.

C. a right angle.

D. a reflex angle.

[2122 S.1 Final Exam MC Q13]

39. In the figure, AC and BD intersect at point E. Find x.



A. 48°

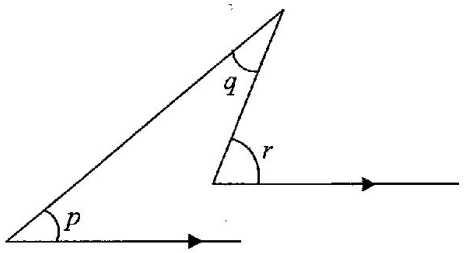
B. 52°

C. 62°

D. 68°

[2122 S.1 Final Exam MC Q14]

40. According to the figure, which of the following must be true?



I. $p+q=r$

II. $q+r=90°$

III. $p+r-q=90°$

A. I only

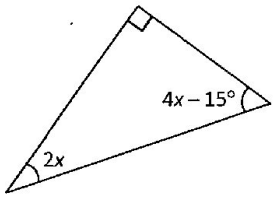
B. II only

C. I and III only

D. II and III only

[2223 S.1 Final Exam MC Q6]

41. In the figure, x =



A. 12.5°.

B. 17.5°.

C. 27.5°.

D. 32.5°.

[2223 S.1 Final Exam MC Q16]

42. It is given that $\triangle ABC \cong \triangle DEF$. If $\angle ABC = 67°$ and $\angle EDF = 100°$, find $\angle ACB$.

A. 13°
B. 23°
C. 67°
D. 100°

[2223 S.1 Final Exam BQ Q4]

43. In the figure, AC and BD intersect at point O. Find $\angle EOD$. (3 marks)