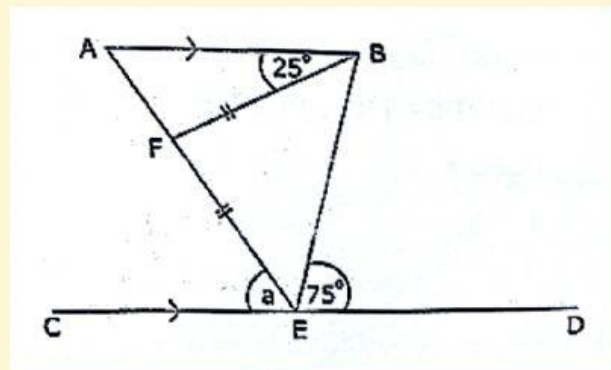


MATHEMATICS GRADE 9

Name: _____ No. ____ Grade 9/____

MATHEMATICAL SKILLS INVOLVING TRIANGLES AND PARALLEL LINES

- A.** In the diagram, $AB \parallel CD$, $BF = EF$, $\widehat{BED} = 75^\circ$ and $\widehat{ABF} = 25^\circ$. Find the value of a .

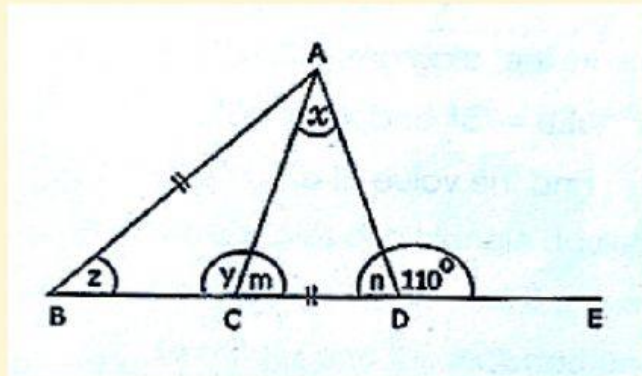


Solution

1. $a + \widehat{FEB} + 75^\circ =$ ()
2. $\widehat{FEB}$ = (property of _____ triangle)
3. $\widehat{ABE}$ = (_____ angles, $AB \parallel CD$)
4. $25^\circ + \widehat{FBE}$ = (substitute $\widehat{ABF}$ and $\widehat{BED}$ in 3.)
5. $\widehat{FBE}$ =
6. $a + 50^\circ + 75^\circ$ = (substitute $\widehat{FEB}$ in 1)
- $\therefore a$ =

isosceles	alternative	180°	$180^\circ - 50^\circ - 75^\circ$
55°	$75^\circ - 25^\circ$	50°	180°
straight angle	$\widehat{BED}$	$\widehat{FBE}$	75°

B. In the diagram, $AB = BD$, $AC = AD$, and $\widehat{ADE} = 110^\circ$. Find the value of x , y , and z .



Solution

1. $AC = AD$ (given)
2. $\widehat{m} = \widehat{n}$ (property of isosceles triangle)
3. $\widehat{n} = \widehat{m}$ ()
4. $\therefore \widehat{m} = 70^\circ$
5. $\widehat{x} + \widehat{m} + \widehat{n} = 180^\circ$ (sum of the angles in a triangle)
6. $\widehat{x} = 180^\circ - 140^\circ$
7. $\widehat{y} + \widehat{m} = 180^\circ$ (straight angle)
8. $\widehat{y} = 110^\circ$
9. $AB = BD$ ($\triangle ABD$ is an isosceles triangle)
10. $\widehat{BAD} = \widehat{n} = 70^\circ$
11. $\widehat{z} + \widehat{BDA} + \widehat{BAD} = 180^\circ$ (sum of the angles of a triangle)
- $\widehat{z} + \widehat{n} + \widehat{n} = 180^\circ$ (substitute $\widehat{BDA} + \widehat{BAD}$)
- $\widehat{z} + 70^\circ + 70^\circ = 180^\circ$
- $\widehat{z} = 180^\circ - 140^\circ$
- $\widehat{z} = 40^\circ$

$\therefore x = 40^\circ$, $y = 110^\circ$, and $z = 40^\circ$

isosceles triangle		180°	$180^\circ - 100^\circ$	40°
40°	$70^\circ - 70^\circ$	70°	180°	110°
straight angle	40°	$180^\circ - 70^\circ$	110°	40°

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