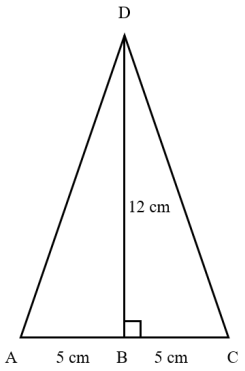
Quiz: Congruent Triangles

Section: Congruence

Sub-section: Congruent Triangles (SAS and ASA) and Congruent Triangles (AAS and HL)

Choose the correct answer.

1. What postulate can be used to prove that the triangles below are congruent? (Understand, MA 2.2 G.8/4)



   A. AAS
   B. ASA
   C. SAS
   D. SSS

   Solution SAS

   $Length\ of\ AB = Length\ of\ BC$ (Given)

   $\hat{ABD} = \hat{CBD}$ (Given)

   $Length\ of\ BD = Length\ of\ BD$ (Common side)

   So, $\Delta ABD \cong \Delta CBD\ (SAS)$

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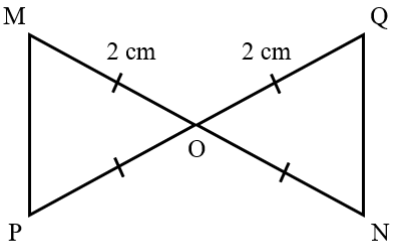
2. What postulate can be used to prove that the triangles below are congruent? (Understand, MA 2.2 G.8/4)



   A. SAS
   B. AAS
   C. ASA
   D. SSS

Solution SAS

$Length\ of\ MO = Length\ of\ QO$ (Given)

$\hat{MOP} = \hat{QON}$ (Vertical angle)

$Length\ of\ OP = Length\ of\ ON$ (Given)

So, $\Delta MOP \cong \Delta QON\ (SAS)$

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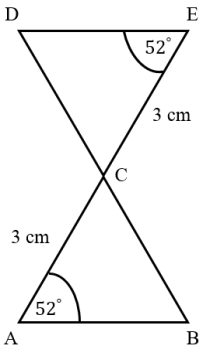
3. What postulate can be used to prove that the triangles below are congruent? (Understand, MA 2.2 G.8/4)



   A. AAS
   B. ASA
   C. SAS
   D. SSS

   Solution ASA

   $\hat{BAC} = \hat{DEC}$ (Given)

   $Length\ of\ AC = Length\ of\ EC$ (Given)

   $\hat{ACB} = \hat{ECD}$ (Vertical angle)

   So, $\Delta ACB \cong \Delta ECD\ (ASA)$

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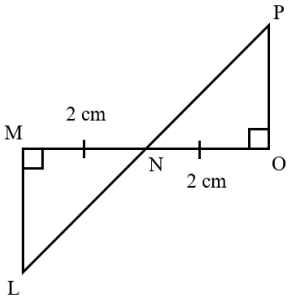
4. What postulate can be used to prove that the triangles below are congruent? (Understand, MA 2.2 G.8/4)



   A. AAS
   B. SSS
   C. SAS
   D. ASA

Solution ASA

$\hat{LMN} = \hat{PON}$ (Given)

$Length\ of\ MN = Length\ of\ ON$ (Given)

$\hat{MNL} = \hat{ONP}$ (Vertical angle)

So, $\Delta LMN \cong \Delta PON\ (ASA)$

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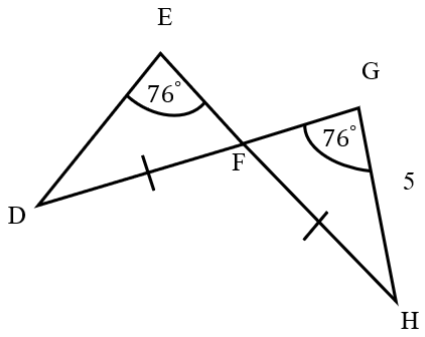
5.



In the figure above, given $D\hat{E}F = F\hat{G}H = 76^{\circ}$, $\overline{DF} = \overline{FH}$ and $\overline{DE} = 3x - 13$.

What is the value of x?

(Understand, MA 2.2 G.8/4)

A. 4

B. 5

C. 6

D. 7

Solution 6

$D\hat{E}F = F\hat{G}H$ (Given)

$D\hat{F}E = H\hat{F}G$ (Vertical angle)

$\overline{DF} = \overline{FH}$ (Given)

So, $\Delta DEF \cong \Delta HGF$ (AAS)

Then $\overline{DE} = \overline{HG}$

Since $\overline{DE} = 3x - 13$, $\overline{HG} = 5$

So, $3x - 13 = 5$

$3x = 18$

Then $x = 6$

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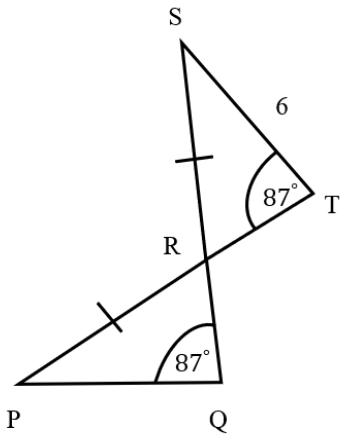
6.



In the figure above, given $P\hat{Q}R = S\hat{T}R = 87^{\circ}$, $\overline{PR} = \overline{SR}$ and $\overline{PQ} = 4x - 26$

What is the value of x?

(Understand, MA 2.2 G.8/4)

A. 5

B. 6

C. 7

D. 8

Solution 8

$P\hat{Q}R = S\hat{T}R$ (Given)

$P\hat{R}Q = S\hat{R}T$ (Vertical angle)

$\overline{PR} = \overline{SR}$ (Given)

So, $\Delta PQR \cong \Delta STR$ (AAS)

Then $\overline{PQ} = \overline{ST}$

Since $\overline{PQ} = 4x - 26$, $\overline{ST} = 6$

So, $4x - 26 = 6$

$4x = 32$

Then $x = 8$

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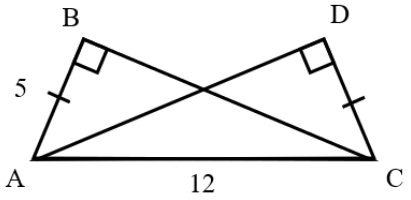
7. What postulate can be used to prove that the triangles below are congruent? (Understand, MA 2.2 G.8/4)



   A. AAS
   B. HL
   C. SAS
   D. SSS

   Solution HL

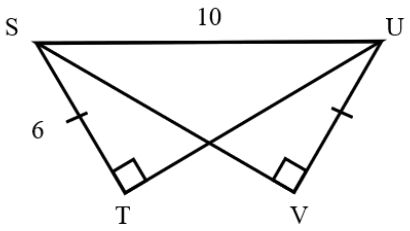
   $\hat{ABC} = \hat{CDA} = 90^{\circ}$ (Right angle)

   $Length\ of\ AB = Length\ of\ CD$ (Given)

   $Length\ of\ AC = Length\ of\ CA$ (Common side)

   So, $\Delta ABC \cong \Delta CDA\ (HL)$

8. What postulate can be used to prove that the triangles below are congruent? (Understand, MA 2.2 G.8/4)



   A. HL
   B. ASA
   C. SAS
   D. SSS

   Solution HL

   $\hat{STU} = \hat{UVS} = 90^{\circ}$ (Right angle)

   $Length\ of\ ST = Length\ of\ UV$ (Given)

   $Length\ of\ SU = Length\ of\ US$ (Common side)

   So, $\Delta STU \cong \Delta UVS\ (HL)$