Name   Ms. Kresovic

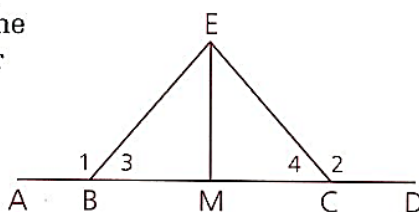Adv Geo -   Date:

What are the 5 purpose of proof?

1. _____

2. _____

3. _____

4. _____

5. _____

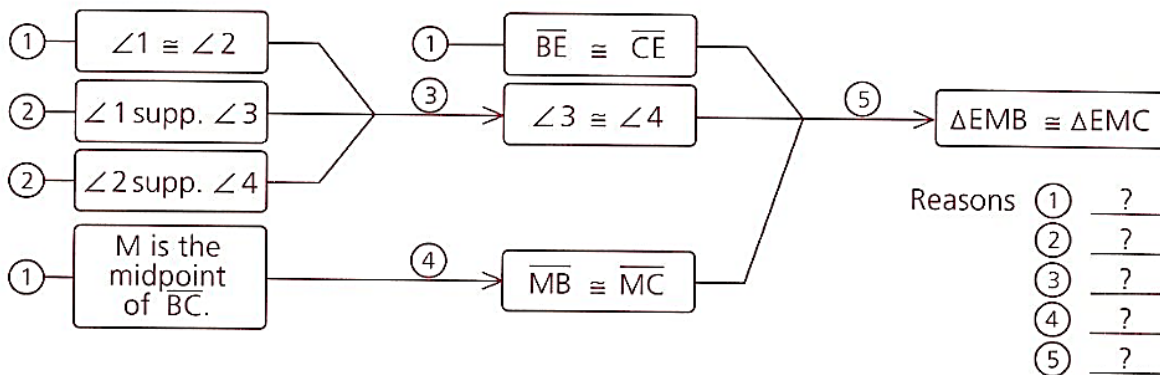What are the three postulates that prove triangles congruent?

Sample Problems

20 Study the problem below, then copy the flow diagram and fill in the reason for each statement.

Given: $\angle 1 \cong \angle 2$;

      M is the midpt. of $\overline{BC}$.

      $\overline{BE} \cong \overline{CE}$
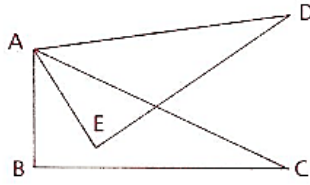
Prove: $\triangle EMB \cong \triangle EMC$

Flow diagram:

① $\angle 1 \cong \angle 2$

② $\angle 1$ supp. $\angle 3$

② $\angle 2$ supp. $\angle 4$

① M is the midpoint of $\overline{BC}$.

① $\overline{BE} \cong \overline{CE}$

③ $\angle 3 \cong \angle 4$

④ $\overline{MB} \cong \overline{MC}$

⑤ $\triangle EMB \cong \triangle EMC$

Reasons ①   ?

                ②   ?

                ③   ?

                ④   ?

                ⑤   ?

21 In problem 20, what given information is not needed to prove the triangles congruent?

Problem Set C

26 Given: $\overline{AB} \cong \overline{AE}$;

$\overrightarrow{AE}$ and $\overrightarrow{AC}$ trisect $\angle BAD$.

$\overline{AB} \perp \overline{BC}$,

$\overline{AE} \perp \overline{DE}$
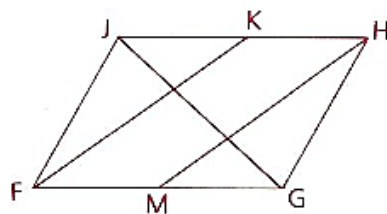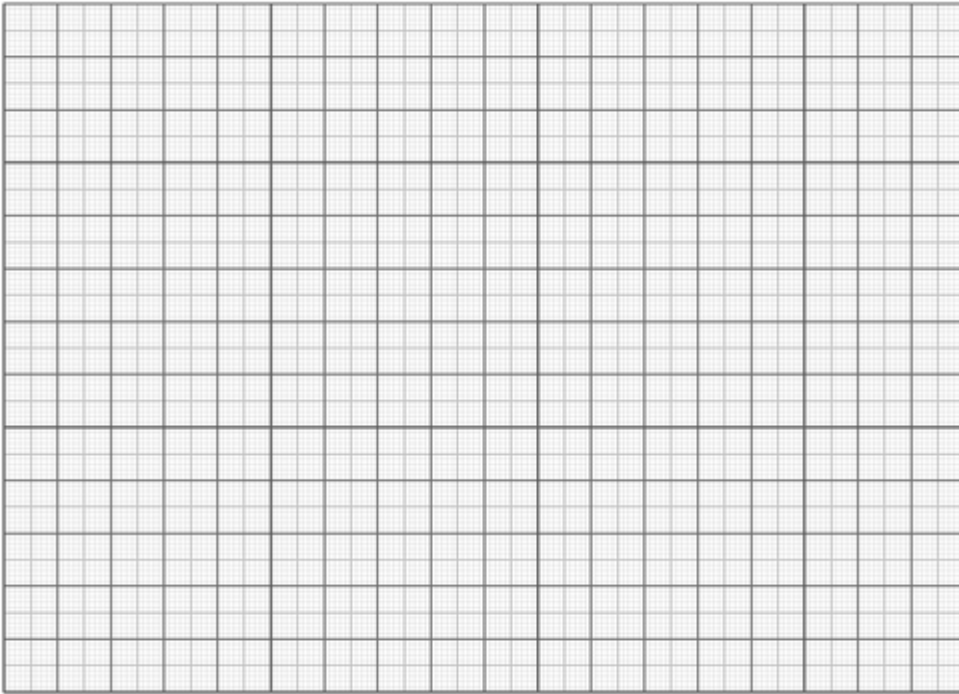
Conclusion: $\triangle ABC \cong \triangle AED$

27 Given: $\overline{JH} \cong \overline{FG}$;
K and M are midpoints.
$\angle HKF \cong \angle FMH$,
$\angle KJG \cong \angle MGJ$,
$\angle JGH \cong \angle FJG$

Conclusion: $\triangle FJK \cong \triangle HGM$

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28 Consider two triangles, △ABC and △FDE, with vertices
A = (0, 7), B = (−4, 0), C = (0, 0), D = (2, 3), E = (2, −1), and
F = (9, −1). Draw a diagram and explain why △ABC ≅ △FDE.

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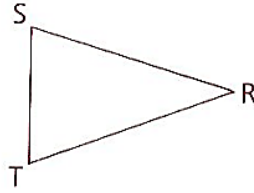Adv Geo -   Date:

22 Given: $\overline{RS} \cong \overline{RT}$

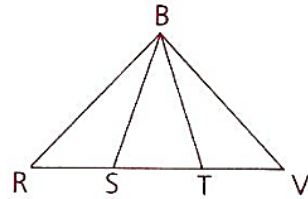Conclusion: $\triangle RST \cong \triangle RTS$
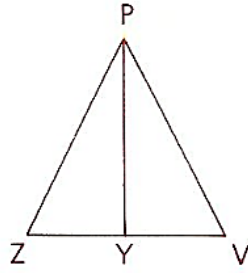

23 Given: S and T trisect $\overline{RV}$

$\angle R \cong \angle V$

$\angle BST \cong \angle BTS$

Conclusion: $\triangle BRS \cong \triangle BVT$

24 Given: $\overrightarrow{PY}$ bisects $\angle VPZ$,

$\angle VPY = (2x + 7)°$,

$\angle ZPY = (3x - 9)°$,

$PZ = \frac{1}{2}x + 5$,

$PV = x - 3$

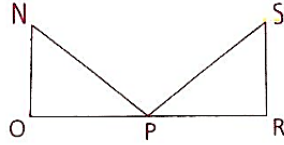Prove: $\triangle VPY \cong \triangle ZPY$

(Use a paragraph proof.)

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Adv Geo - Date:

Homework

11 Given: ∠N is comp. to ∠NPO.
  ∠S is comp. to ∠SPR.
  ∠NPO ≅ ∠SPR,
  $\overline{NP} ≅ \overline{SP}$

  Conclusion: △NOP ≅ △SRP

12 Given: O is the midpt. of $\overline{AY}$.
  O is the midpt. of $\overline{ZX}$.

  Conclusion: △ZOA ≅ △XOY
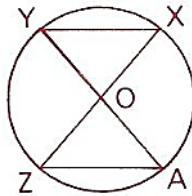
13 Given: $\overline{EO} \cong \overline{KM}$,
$\quad\quad\quad \overline{FO} \cong \overline{JM}$,
$\quad\quad\quad \overline{EG} \cong \overline{KH}$;
$\quad\quad\quad$ F is the midpt. of $\overline{EG}$.
$\quad\quad\quad$ J is the midpt. of $\overline{KH}$.
$\quad\quad$ Conclusion: $\triangle EFO \cong \triangle KJM$
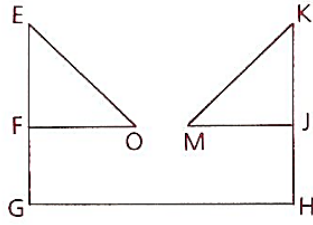
14 Given: $\angle 1 \cong \angle 4$,
$\quad\quad\quad \overline{PR} \cong \overline{TS}$,
$\quad\quad\quad \overline{NP} \cong \overline{NT}$
$\quad\quad$ Prove: $\triangle NPR \cong \triangle NTS$
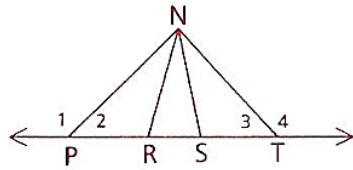
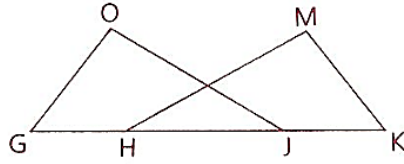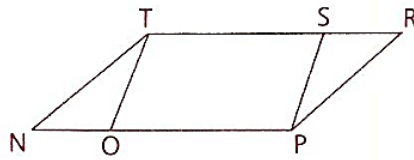Name   Ms. Kresovic
Adv Geo -   Date:

15 Given: $\overline{GH} \cong \overline{KJ}$,
$\quad\quad\quad \overline{HM} \cong \overline{JO}$,
$\quad\quad\quad \overline{GO} \cong \overline{KM}$

$\quad$ Prove: $\triangle GOJ \cong \triangle KMH$

16 Given: $\angle R \cong \angle N$,
$\quad\quad\quad \overline{RP} \cong \overline{NT}$,
$\quad\quad\quad \overline{RT} \cong \overline{NP}$,
$\quad\quad\quad \overline{TS} \cong \overline{OP}$

$\quad$ Conclusion: $\triangle NOT \cong \triangle RSP$

17 Given: $\angle 1 \cong \angle 6$,
 $\overline{BC} \cong \overline{EC}$
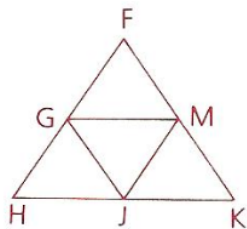
  Conclusion: $\triangle ABC \cong \triangle DEC$
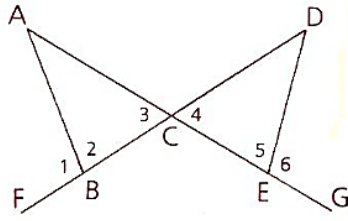
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3: Congruent Triangles
3.1: What Are Congruent Figures?

Name   Ms. Kresovic
Adv Geo -   Date:

18 Given: $\overline{FH} \cong \overline{FK}$,

$\angle H \cong \angle K$;

G is the midpt. of $\overline{FH}$.

M is the midpt. of $\overline{FK}$.

J is the midpt. of $\overline{HK}$.

Conclusion: $\triangle GHJ \cong \triangle MKJ$

25 Given: $\angle 3 \cong \angle 1$, $\angle 4 \cong \angle 2$,
$\angle DAC \cong \angle 3$, $\angle BAC \cong \angle 1$,
$\overline{AD} \cong \overline{AB}$

Prove: $\triangle CAD \cong \triangle CAB$