**1. a.** Given

**b.** Reflexive

**c.** $\triangle JKM$

**d.** $\triangle LMK$

**2.** $\overline{IE} \cong \overline{GH}$, $\overline{EF} \cong \overline{HF}$: given. $F$ is the midpoint of $\overline{GI}$; given. $\overline{IF} \cong \overline{FG}$ by the definition of midpoint. Therefore, $\triangle EFI \cong \triangle HFG$ by SSS.

**3.** It is given that $\overline{WZ} \cong \overline{ZS} \cong \overline{SD} \cong \overline{DW}$. $\overline{ZD} \cong \overline{ZD}$ by the Reflexive Property of Congruence. Therefore, $\triangle WZD \cong \triangle SDZ$ by SSS.

**4.** Yes; $\overline{OB} \cong \overline{OB}$ by Refl. Prop.; $\angle BOP \cong \angle BOR$ since all rt. $\measuredangle$s are $\cong$; $\overline{OP} \cong \overline{OR}$ (Given); the $\triangle$s are $\cong$ by SAS.

**5.** Yes; $\overline{AC} \cong \overline{DB}$ (Given); $\overline{AE} \cong \overline{CE}$ and $\overline{BE} \cong \overline{DE}$ (Def. of midpt.); $\angle AEB \cong \angle CED$ (vert. $\measuredangle$s are $\cong$) $\triangle AEB \cong \triangle CED$ by SAS.

**6.** No; either $\overline{PQ} \cong \overline{QS}$ is needed for SSS, or $\angle T \cong \angle R$ for SAS.

**7.** Yes; since $\overline{AC} \cong \overline{AC}$ by the Refl. Prop., the $\triangle$s are $\cong$ by SAS.

**8.** $\overline{LG} \cong \overline{MN}$

**9.** $\angle T \cong \angle V$ or $\overline{RS} \cong \overline{WU}$

**10.** $\overline{WV}, \overline{VU}$

**11.** $\angle W$

**12.** $\angle U, \angle V$

**13.** $\overline{WU}$

**14.** $\angle X$

**15.** $\overline{XZ}, \overline{YZ}$

**16.** Yes; $\triangle ACB \cong \triangle EFD$ by SAS.

**17.** Yes; $\triangle PVQ \cong \triangle STR$ by SSS.

**18.** $\angle AXN \cong \angle GXR$ (Vert. $\measuredangle$s are $\cong$.), $\overline{AX} \cong \overline{GX}$ and $\overline{NX} \cong \overline{RX}$ (def. of midpoint), so $\triangle ANX \cong \triangle GRX$ by SAS.

**19.** A

**20.** $\triangle ANG \cong \triangle RWT$; SAS

**21.** $\triangle KLJ \cong \triangle MON$; SSS

**22.** Not possible; need $\angle H \cong \angle P$ or $\overline{DY} \cong \overline{TK}$.

**23.** $\triangle JEF \cong \triangle SVF$ or $\triangle JEF \cong \triangle SFV$; SSS

**24.** $\triangle BRT \cong \triangle BRS$; SSS

**25.** $\triangle PQR \cong \triangle NMO$; SAS

**26.** $GK$ bisects $\angle JGM$, so $\angle JGK \cong \angle MGK$ (def. of bisect.). $\overline{GJ} \cong \overline{GM}$ (given), and $\overline{GK} \cong \overline{GK}$ (Reflexive Prop. of $\cong$). $\triangle GJK \cong \triangle GMK$ by SAS.

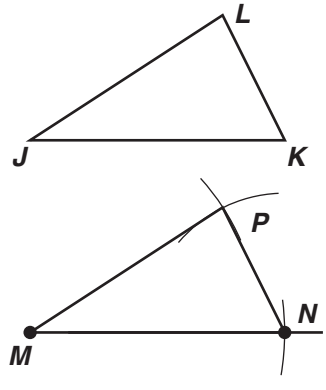
**27.** $\overline{AE}$ and $\overline{BD}$ bisect each other, so $\overline{AC} \cong \overline{CE}$ and $\overline{BC} \cong \overline{CD}$. $\angle ACB \cong \angle DCE$ because vert. $\measuredangle$s are $\cong$. $\triangle ACB \cong \triangle ECD$ by SAS.

**28.** No; even though the $\measuredangle$s are $\cong$, the sides may not be.

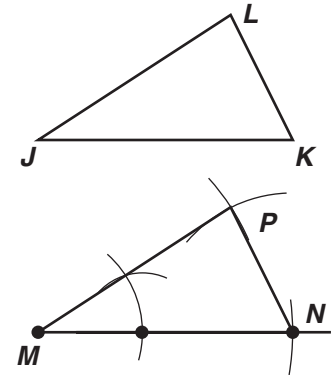
**29.** No; you would need $\angle H \cong \angle K$ or $\overline{GI} \cong \overline{JL}$.

**30.** yes; SAS

**31.**




**32.**



**33. a–b.** Answers may vary. Sample:

**a.** wallpaper designs; ironwork on a bridge; highway warning signs

**b.** $\cong$ $\triangle$s produce a well-balanced, symmetric appearance. In construction, $\cong$ $\triangle$s enhance designs. Highway warning signs are more easily identified if they are $\cong$.

**34.** $\angle ISP \cong \angle PSO$; $\triangle ISP \cong \triangle OSP$ by SAS.

**35.** $\overline{IP} \cong \overline{PO}$; $\triangle ISP \cong \triangle OSP$ by SSS.

**36.** Yes; $\triangle ADB \cong \triangle CBD$ by SAS; $\angle ADB \cong \angle DBC$ because if $\parallel$ lines, then alt. int. $\angle$s are $\cong$.

**37.** Yes; $\triangle ABC \cong \triangle CDA$ by SAS; $\angle DAC \cong \angle ACB$ because if $\parallel$ lines, then alt. int. $\angle$s are $\cong$.

**38.** **1.** $\overline{FG} \parallel \overline{KL}$ (Given)

**2.** $\angle GFK \cong \angle FKL$ (If $\parallel$ lines, then alt. int. $\angle$s are $\cong$.)

**3.** $\overline{FG} \cong \overline{KL}$ (Given)

**4.** $\overline{FK} \cong \overline{FK}$ (Reflexive Prop. of $\cong$)

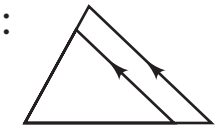
**5.** $\triangle FGK \cong \triangle KLF$ (SAS)

**39.** $\overline{AM} \cong \overline{MB}$ because $M$ is the midpt. of $\overline{AB}$. $\angle B \cong \angle AMC$ because all right $\angle$s are $\cong$. $\overline{CM} \cong \overline{DB}$ is given. $\triangle AMC \cong \triangle MBD$ by SAS.

**40.** $HG = HK + KG$ and $KL = KG + GL$ by the Seg. Add. Post. Since $HK = GL$, use subst. twice to get $HG = GL + KG = KL$. So $\overline{HG} \cong \overline{KL}$ and the $\triangle$s are $\cong$ by SSS.

**41.** $\triangle MNO \cong \triangle OLM$ by SAS. Therefore $\angle NMO \cong \angle LOM$ by def. of $\cong$ $\triangle$s, so $\overline{MN} \parallel \overline{LO}$ by the Conv. of the Alt. Int. $\angle$s Thm.

**42.** Answers may vary. Sample:



**43.** **a.** No; the angles are not necessarily $\cong$.

**b.** No; sample explanation: the $\measuredangle$s can be changed without changing the side lengths.

**c.** Answers may vary. Sample: a diagonal