1. SAS; $\triangle KLJ \cong \triangle OMN$; $\angle K \cong \angle O$; $\angle J \cong \angle N$; $\overline{JK} \cong \overline{NO}$
2. $\triangle ABD \cong \triangle CBD$ by ASA because $\overline{BD} \cong \overline{BD}$ by Reflexive Prop. of $\cong$; $\overline{AB} \cong \overline{CB}$ by CPCTC.
3. $\triangle MOE \cong \triangle REO$ by SSS because $\overline{OE} \cong \overline{OE}$ by Reflexive Prop. of $\cong$; $\angle M \cong \angle R$ by CPCTC.
4. **a.** SSS

   b. CPCTC
5. The △s are $\cong$ by SAS so the distance across the sinkhole is 26.5 yd by CPCTC.
6. $\angle SPT = \angle OPT$, $\overline{SP} \cong \overline{OP}$ (Given), $\overline{PT} \cong \overline{PT}$ (Reflexive Prop.), $\triangle SPT \cong \triangle OPT$ (SAS), $\angle S = \angle O$ (CPCTC)
7. $\overline{YT} \cong \overline{YP}$, $\angle C \cong \angle R$, $\angle T \cong \angle P$ (Given), $\angle CYT \cong \angle RYP$ (If 2 ∠s of a △ are $\cong$ to 2 ∠s of another, the 3rd ∠s are $\cong$.), $\triangle CYT \cong \triangle RYP$ (ASA), $\overline{CT} \cong \overline{RP}$ (CPCTC)
8. $\angle PKL \cong \angle QKL$ by def. of ∠ bisect, and $\overline{KL} \cong \overline{KL}$ by Reflexive Prop. of $\cong$, so the △s are $\cong$ by SAS.
9. $\overline{KL} \cong \overline{KL}$ by Reflexive Prop. of $\cong$; $\overline{PL} \cong \overline{LQ}$ by Def. of $\perp$ bis.; $\angle KLP \cong \angle KLQ$ by Def. of $\perp$; the △s are $\cong$ by SAS.
10. $\angle KLP \cong \angle KLQ$ because all rt ∠s are $\cong$; $\overline{KL} \cong \overline{KL}$ by Reflexive Prop. of $\cong$; and $\angle PKL \cong \angle QKL$ by def. of bisect; the △s are $\cong$ by ASA.
11. $\angle QPS \cong \angle RSP$, $\angle Q \cong \angle R$ (Given), $\angle QSP \cong \angle RPS$ (If 2 ∠s of a △ are $\cong$ to 2 ∠s of another, the 3rd ∠s are $\cong$.), $\overline{PS} \cong \overline{PS}$ (Reflexive Prop.), $\triangle QPS \cong \triangle RSP$ (ASA), $\overline{PQ} \cong \overline{SR}$ (CPCTC)

12. Yes; $\triangle ABD \cong \triangle CBD$ by SSS so $\angle A \cong \angle C$ by CPCTC.

13. a. $\overline{AP} \cong \overline{PB}$; $\overline{AC} \cong \overline{BC}$

b. The diagram is constructed in such a way that the $\triangle$s are $\cong$ by SSS. $\angle CPA \cong \angle CPB$ by CPCTC. Since these $\angle$s are $\cong$ and suppl., they are right $\angle$s. Thus, $\overleftrightarrow{CP}$ is $\perp$ to ℓ.

14. Explanations may vary. Sample: The error is in line 4. You cannot say $\overline{AD} \cong \overline{CD}$ by the definition of bisect. $\overline{BD}$ is given to be an angle bisector, not a segment bisector. Replace line 4 with:

4. $\overline{BD} \cong \overline{BD}$ 4. $\cong$ is reflexive.

15. $\overline{BA} \cong \overline{BC}$ is given; $\overline{BD} \cong \overline{BD}$ by the Reflexive Prop. of $\cong$ and since $\overline{BD}$ bisects $\angle ABC$, $\angle ABD \cong \angle CBD$ by def. of an $\angle$ bisector; thus, $\triangle ABD \cong \triangle CBD$ by SAS; $\overline{AD} \cong \overline{DC}$ by CPCTC so $\overline{BD}$ bisects $\overline{AC}$ by def. of a bis.; $\angle ADB \cong \angle CDB$ by CPCTC and $\angle ADB$ and $\angle CDB$ are suppl.; thus, $\angle ADB$ and $\angle CDB$ are right $\angle$s and $\overline{BD} \perp \overline{AC}$ by def. of $\perp$.

16. Since ℓ bisects $\overline{AB}$ at C, $\overline{AC} \cong \overline{BC}$. $\overline{PC} \cong \overline{PC}$ by the Reflexive Prop. and $\angle ACP \cong \angle BCP$ because they are rt. $\angle$s. So $\triangle PCA \cong \triangle PCB$ by SAS and $PA = PB$ by CPCTC.

17. $\triangle ABX \cong \triangle ACX$ by SSS, so $\angle BAX \cong \angle CAX$ by CPCTC. Thus $\overrightarrow{AX}$ bisects $\angle BAC$ by the def. of $\angle$ bisector.

18. Prove $\triangle ABE \cong \triangle CDF$ by SAS since $\overline{AE} \cong \overline{FC}$ by subtr.

19. Prove $\triangle KJM \cong \triangle QPM$ by ASA since $\angle P \cong \angle J$ and $\angle K \cong \angle Q$ by alt. int. $\angle$s are $\cong$.

20. **1.** $\overline{PR} \parallel \overline{MG}$; $\overline{MP} \parallel \overline{GR}$ (Given)

2. Draw $\overline{PG}$. (2 pts. determine a line.)

3. $\angle RPG \cong \angle PGM$ and $\angle RGP \cong \angle GPM$ (If $\parallel$ lines, then alt. int. $\angle$s are $\cong$.)

4. $\triangle PGM \cong \triangle GPR$ (ASA). A similar proof can be written if diagonal $\overline{RM}$ is drawn.

21. Since $\triangle PGM \cong \triangle GPR$ (or $\triangle PMR \cong \triangle GRM$), then $\overline{PR} \cong \overline{MG}$ and $\overline{MP} \cong \overline{GR}$ by CPCTC.