For problems 1–8, answer true or false.

1. The perpendicular-bisectors of the sides of a triangle are concurrent at a point that is equidistant from the vertices of the triangle.

2. If $\overline{DF}$ is a diameter of $\odot O$ and $\triangle DEF$ is inscribed in $\odot O$, then $m\angle E = 90°$.

3. If $\overline{AB}$ is a diameter of $\odot Q$ and $\overline{AB}$ intersects chord $\overline{CD}$, then $\overline{AB} \perp \overline{CD}$

4. If the hypotenuse of an isosceles right triangle measures $2\sqrt{3}$, the measure of each leg will be $\sqrt{6}$.

5. If $\frac{a}{b} = \frac{c}{d}$ then $\frac{a}{b} = \frac{d}{c}$

6. If the sides of a triangle measure 20, 21, and 29 units, the triangle must be a right triangle.

7. All rectangles are similar.

8. If $\triangle ABC \sim \triangle CDE$ then $\frac{AB}{BC} = \frac{CD}{DE}$.

---

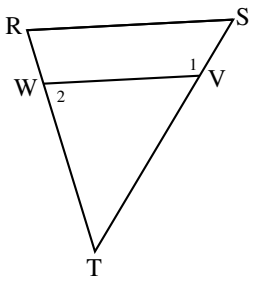
9. The measures of two supplementary angles have the ratio 2:3. What is the measure of the smaller angle?

10. *Given:* In $\triangle RST$, $\overline{WV} \parallel \overline{RS}$
$m\angle 1 = 132°$
$m\angle 2 = 78°$

Find: $m\angle R$, $m\angle S$, and $m\angle T$

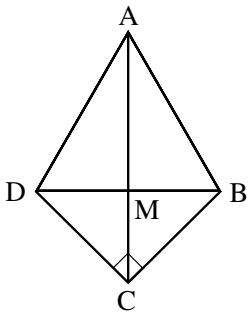
11. *Given:* In $\triangle RST$, $\overline{WV} \parallel \overline{RS}$
$\overline{TV} \cong \overline{TR}$
$WT = 9$, $TS = 16$

Find: RW



Problems 10 & 11

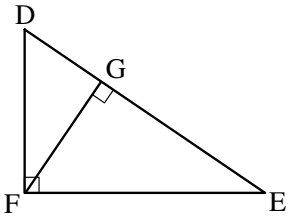
12. In the kite shown, $\overline{AB} \cong \overline{BD} \cong \overline{AD}$ and $\overline{DC} \perp \overline{CB}$. If $AM = 9$, find CB.



13. In the figure shown, which triangle(s) is similar to $\triangle DGF$?

14. *Given:* right $\triangle DEF$ with altitude $\overline{FG}$
$\overline{DE} = 20$
$\overline{FG} = 8$

Find: $\overline{DG}$ and $\overline{DF}$



Problems 13 & 14

15. A circle is divided into five congruent arcs at points A, B, C, D, and E (in that order). Find the measure of $\angle EAC$.

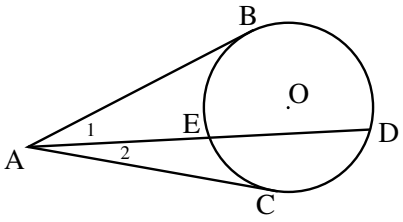
16. Describe the locus of points in space that are a distance of 2 inches from a given line.

17. *Given:* $\odot O$ with tangent $\overline{AB}$
$\overline{AB} = 10$
$\overline{ED} = 15$

Find: $\overline{AE}$

18. *Given:* $\odot O$ with tangents $\overline{AB}$ and $\overline{AC}$
$m\angle 1 = 20°$
$m\widehat{CD} = 85°$
$m\widehat{EB} = 85°$

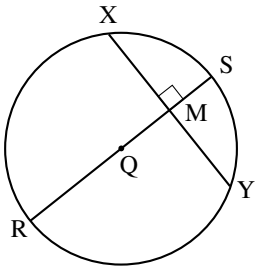
Find: $m\widehat{BD}$ and $m\angle 2$



Problems 17 & 18

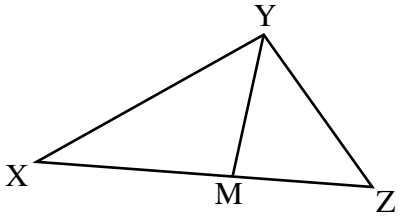
19. *Given:* Diameter $\overline{RS}$ is perpendicular to $\overline{XY}$
$MS = 4$
$XY = 12$

Find: QS

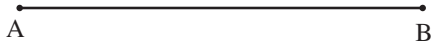


20. *Given:* $\overrightarrow{YM}$ bisects $\angle XYZ$
$XY = 14$
$YZ = 10$
$XZ = 18$

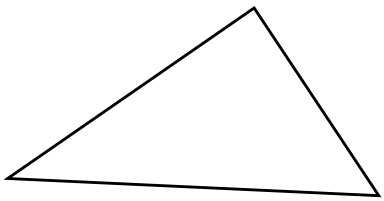
Find: XM



21. The line segment below measures 2 inches. Construct a line segment that measures $2\sqrt{3}$.

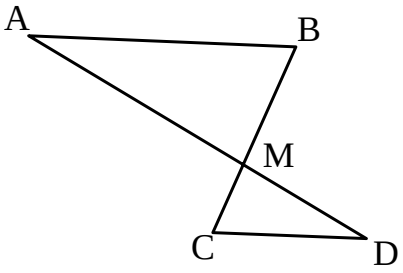


22. Construct the circumscribed circle about the triangle below.



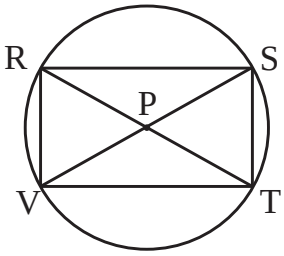
23. *Given:* $\overline{\text{AB}} \parallel \overline{\text{CD}}$

Prove: $\dfrac{AM}{DM} = \dfrac{BM}{CM}$



24. *Given:* $\overline{\text{RT}}$ and $\overline{\text{SV}}$ are diameters of $\odot$P

Prove: RSTV is a rectangle



Exam 3 Review – Solutions

1. true **2.** true **3.** false **4.** true **5.** false **6.** true **7.** false **8.** true **9.** $72°$ **10.** $78°$, $48°$, and $54°$ **11.** 3 **12.** $3\sqrt{6}$ **13.** $\triangle$DFE and $\triangle$FGE **14.** $\overline{\text{DG}} = 4$, $\overline{\text{DF}} = 4\sqrt{5}$ **15.** $72°$ **16.** A cylinder with radius 2 inches that has infinite length **17.** 5 **18.** $\text{m}\overset{\frown}{\text{BD}} = 125°$ and $\text{m}\angle 2 = 10°$ **19.** 6.5 **20.** 10.5

23.

Statement	Reasoning
1. $\overline{\text{AB}} \parallel \overline{\text{CD}}$	1. Given
2. $\angle\text{A} \cong \angle\text{D}$	2. alt interior angles
3. $\angle\text{AMB} \cong \angle\text{DMC}$	3. vertical angles
4. $\triangle\text{AMB} \sim \triangle\text{DMC}$	4. AA
5. $\dfrac{AM}{DM} = \dfrac{BM}{CM}$	5. CSSTP

24.

Statement	Reasoning
1. $\overline{\text{RT}}$ and $\overline{\text{SV}}$ are diameters of $\odot$P	1. Given
2. $\angle\text{APV} \cong \angle\text{SPT}$	2. vertical angles
3. $\overset{\frown}{\text{RV}} \cong \overset{\frown}{\text{ST}}$	3. $\cong$ central $\angle$s have $\cong$ arcs
4. $\overline{\text{RV}} \cong \overline{\text{ST}}$	4. $\cong$ arcs have $\cong$ chords
5. $\angle\text{RPS} \cong \angle\text{TPV}$	5. vertical angles
6. $\overset{\frown}{\text{RS}} \cong \overset{\frown}{\text{TV}}$	6. $\cong$ central $\angle$s have $\cong$ arcs
7. $\overline{\text{RS}} \cong \overline{\text{TV}}$	7. $\cong$ arcs have $\cong$ chords
8. RSTV is a parallelogram	8. Both pairs of opposite sides are $\cong$
9. $\angle\text{RST}$ is a rt $\angle$	9. An $\angle$ inscribed in a semicircle is a rt $\angle$
10. RSTV is a rectangle	9. Def of a rectangle