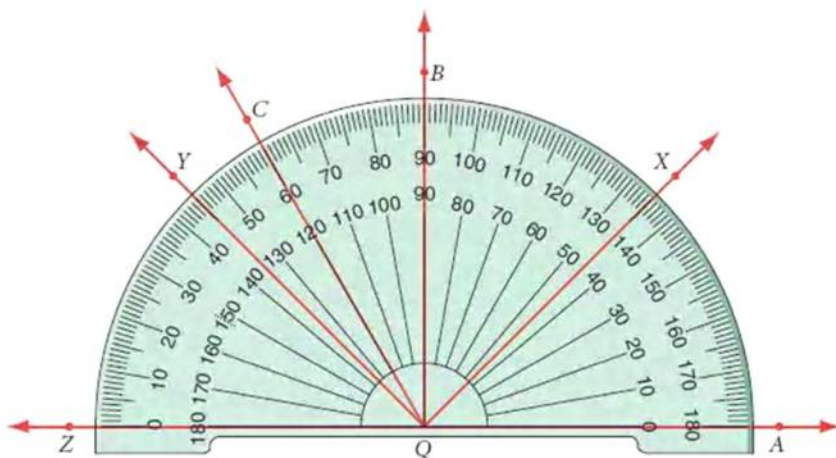


Angle Problems

For Exercises 7–14, find the measure of each angle to the nearest degree.

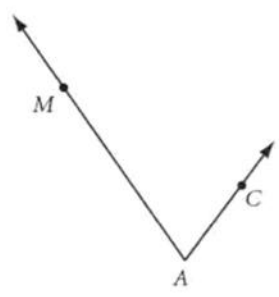


If an exercise has an **h** at the end, you can find a hint to help you in Hints for Selected Exercises at the back of the book.

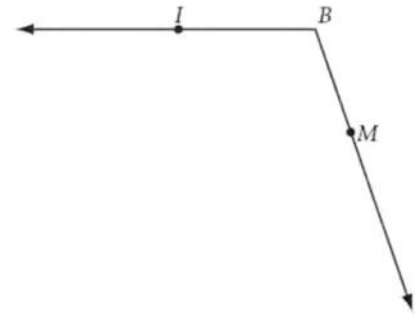
- 7. $m\angle AQB \approx ?$
 - 8. $m\angle AQC \approx ?$
 - 9. $m\angle XQA \approx ?$
 - 10. $m\angle AQY \approx ?$
 - 11. $m\angle ZQY \approx ?$
 - 12. $m\angle ZQX \approx ?$
 - 13. $m\angle CQB \approx ?$ **h**
 - 14. $m\angle XQY \approx ?$
15. Adjacent angles $\angle XQA$ and $\angle XQY$ share a vertex and a side. Taken together they form the larger angle $\angle AQY$. Compare their measures. Does $m\angle XQA + m\angle XQY = m\angle AQY$?

For Exercises 16–20, use your protractor to find the measure of the angle to the nearest degree.

16. $m\angle MAC \approx ?$



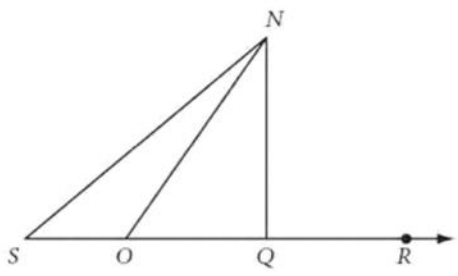
17. $m\angle IBM \approx ?$



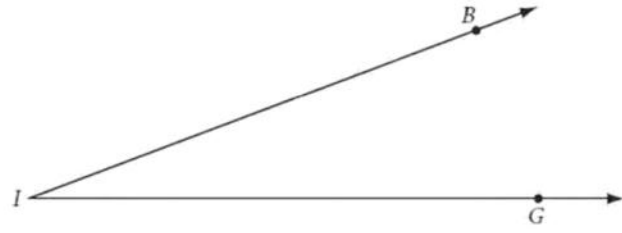
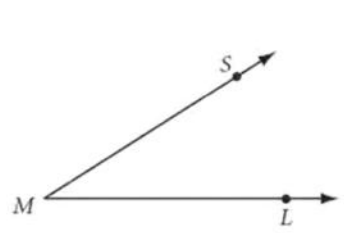
18. $m\angle S \approx ?$

19. $m\angle SON \approx ?$

20. $m\angle NOR \approx ?$

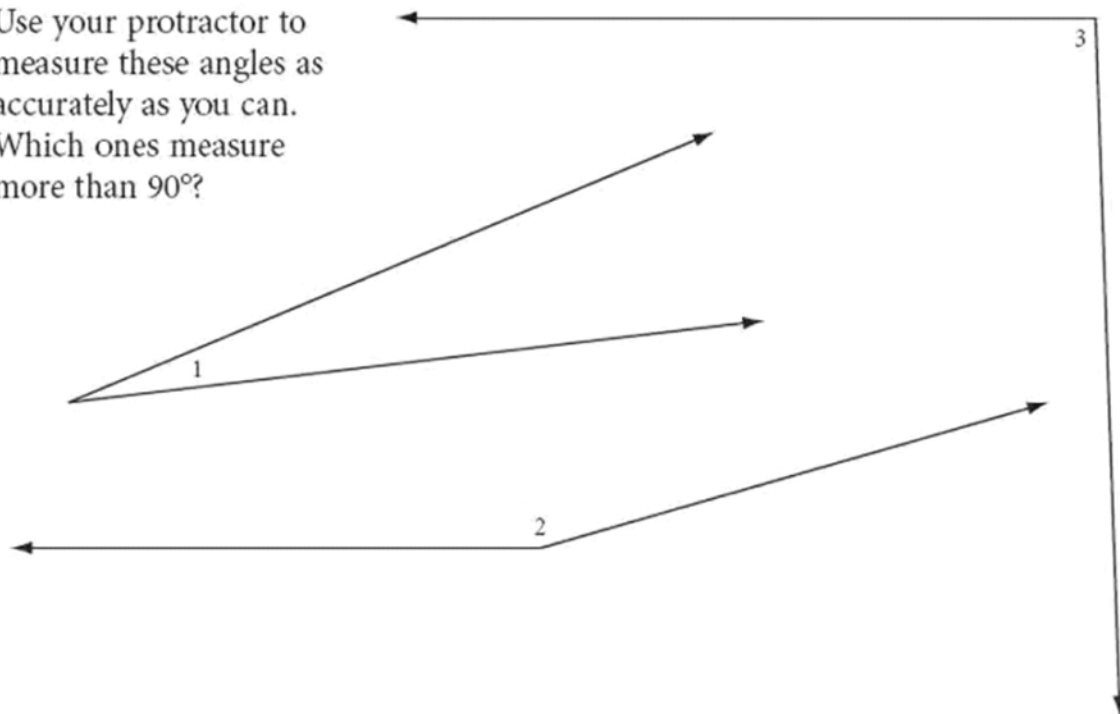


21. Which angle below has the greater measure, $\angle SML$ or $\angle BIG$? Why?



EXAMPLE B

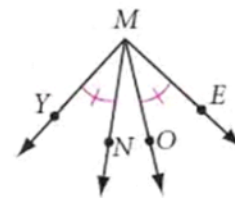
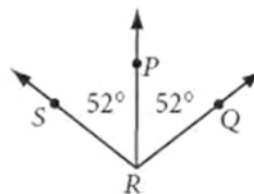
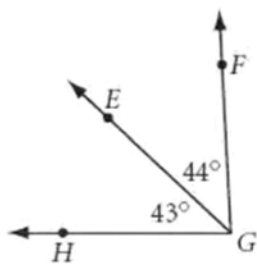
Use your protractor to measure these angles as accurately as you can. Which ones measure more than 90° ?



EXAMPLE C

Look for angle bisectors and congruent angles in the figures below.

- Name each angle bisector and the angle it bisects.
- Name all the congruent angles in the figure. Use the congruence symbol and name the angles so there is no confusion about which angle you mean.



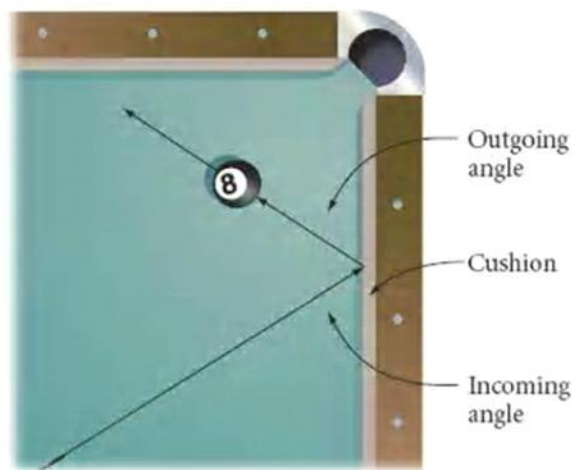


Investigation Virtual Pool

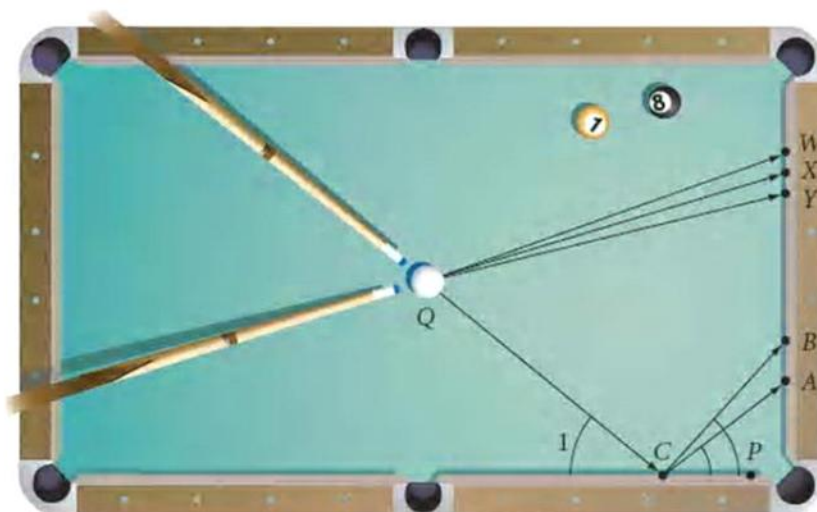
You will need

- the worksheet Poolroom Math
- a protractor

Pocket billiards, or pool, is a game of angles. When a ball bounces off the pool table's cushion, its path forms two angles with the edge of the cushion. The **incoming angle** is formed by the cushion and the path of the ball approaching the cushion. The **outgoing angle** is formed by the cushion and the path of the ball leaving the cushion. As it turns out, the measure of the outgoing angle equals the measure of the incoming angle.



The **outgoing angle** is formed by the cushion and the path of the ball leaving the cushion. As it turns out, the measure of the outgoing angle equals the measure of the incoming angle.



- Step 1 Use your protractor to find the measure of $\angle 1$. Which is the correct outgoing angle? Which point—A or B—will the ball hit?
- Step 2 Which point on the cushion—W, X, or Y—should the white ball hit so that the ray of the outgoing angle passes through the center of the 8-ball?
- Step 3 Compare your results with your group members' results. Does everyone agree?
- Step 4 How would you hit the white ball against the cushion so that the ball passes over the same spot on the way back?
- Step 5 How would you hit the ball so that it bounces off three different points on the cushions without ever touching cushion \overline{CP} ?