

**LESSON**  
**5.2****Challenge Practice***For use with the lesson "Solve Inequalities Using Multiplication and Division"*

**In Exercises 1–5,  $a$ ,  $b$ ,  $c$ , and  $d$  are real numbers such that  $d < c < 0 < b < a$ . Tell whether the statement is *always true*, *sometimes true*, or *never true*. If it is sometimes true, give a set of values for which it is true and a set of values for which it is false.**

1.  $ac > 0$
2.  $ab > cd$
3.  $ad < bc$
4.  $ad > c$
5.  $ac > bd$

**In Exercises 6–10, translate the verbal statement using set-builder notation.**

6. The set of all  $x$  and  $y$  such that  $x$  is at least twice as large as one-third of  $y$ .
7. The set of all  $x$  and  $y$  such that one-half of  $x$  is at most 3 less than  $y$ .
8. The set of all  $x$  and  $y$  such that  $x$  is no more than twice as large as  $y$ .
9. The set of all  $x$  and  $y$  such that  $y$ , when tripled, is more than  $x$ .
10. The set of all  $x$  and  $y$  such that the sum of  $x$  and 3, when doubled, is less than  $y$ .

**In Exercises 11 and 12, use the following information.**

Ann has been offered her choice of two part-time jobs. Frozen Flavors ice cream parlor will pay her \$5 an hour for the first 10 hours worked each week and \$7 an hour for each additional hour. Nice Slice pizza parlor will pay her \$6 an hour for the first 15 hours worked each week and \$6.50 for each additional hour. Assume Ann will work at least 15 hours each week at either job.

11. Write an inequality which states that working  $x$  hours at Frozen Flavors will earn a larger weekly salary than working  $x$  hours at Nice Slice.
12. Find the number of hours Ann must work in a week so that her weekly salary from Frozen Flavors is greater than her weekly salary from Nice Slice.