

**GUIDED PRACTICE** for Examples 2 and 3**Graph the inequality in a coordinate plane.**

5. $y > -1$

6. $x \geq -4$

7. $y \geq -3x$

8. $y < 2x + 3$

9. $x + 3y < 9$

10. $2x - 6y > 12$

**EXAMPLE 4****TAKS REASONING: Multi-Step Problem**

MOVIE RECORDING A film class is recording a DVD of student-made short films. Each student group is allotted up to 300 megabytes (MB) of video space. The films are encoded on the DVD at two different rates: a standard rate of 0.4 MB/sec for normal scenes and a high-quality rate of 1.2 MB/sec for complex scenes.



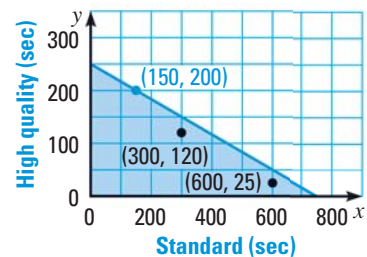
- Write an inequality describing the possible amounts of time available for standard and high-quality video.
- Graph the inequality.
- Identify three possible solutions of the inequality.

Solution**STEP 1** Write an inequality. First write a verbal model.

Standard rate (MB/sec)	•	Standard time (sec)	+	High-quality rate (MB/sec)	•	High-quality time (sec)	≤	Total space (MB)
↓		↓		↓		↓		↓
0.4	•	x	+	1.2	•	y	≤	300

An inequality is $0.4x + 1.2y \leq 300$.**STEP 2** Graph the inequality. First graph the boundary line $0.4x + 1.2y = 300$. Use a solid line because the inequality symbol is \leq .

Test the point $(0, 0)$. Because $(0, 0)$ is a solution of the inequality, shade the half-plane that contains $(0, 0)$. Because x and y cannot be negative, shade only points in the first quadrant.

**STEP 3** Identify solutions. Three solutions are given below and on the graph. $(150, 200)$ ← 150 seconds of standard and 200 seconds of high quality $(300, 120)$ ← 300 seconds of standard and 120 seconds of high quality $(600, 25)$ ← 600 seconds of standard and 25 seconds of high quality

For the first solution, $0.4(150) + 1.2(200) = 300$, so all of the available space is used. For the other two solutions, not all of the space is used.