

## Project: Teacher's Notes

For use with Chapter 6

- GOALS**
- Use a verbal model to write an algebraic equation or inequality to solve a real-life problem.
  - Graph and compare real numbers using a number line.
  - Write, solve, and graph compound linear inequalities and use compound linear inequalities to model and solve real-life problems.
  - Find the mean, median, and mode of data and read and interpret box-and-whisker plots of real-life data.
  - Make generalizations based on data.

**MANAGING THE PROJECT** Students may find the lengths of videotapes of popular movies easier than they can find the lengths of the original movies. Most of the videotape lengths can be found in the Library of Congress catalog or at the web site <http://www.cinemia.net>.

One 1930s animated film, *Snow White and the Seven Dwarfs*, is in the top 50 box office hits of all time. However, this film is very short. You may want to discuss whether or not it is representative of films of the time. The project is more interesting if data are limited to non-animated films.

**RUBRIC** The following rubric can be used to assess student work.

- 4** The student writes and graphs an appropriate inequality, finds the means, and draws the box-and-whisker plot correctly. The report presents an insightful analysis of how the lengths of popular movies have changed over time and presents convincing evidence.
- 3** The student writes and graphs an appropriate inequality, finds the means, and draws the box-and-whisker plot. However, the student may not perform all calculations accurately or may not fully address the issues when interpreting the data. The report presents an analysis of the main question, but the presentation may not be as convincing as possible.
- 2** The student finds and analyzes data. However, the work may be incomplete or reflect misunderstanding. For example, the means may not be plotted on the number line or the box-and-whisker plot may not be drawn correctly or with an appropriate scale. The report may indicate a limited grasp of certain ideas or may lack key supporting evidence.
- 1** The inequality, graph, means, or box-and-whisker plot may be missing or may not show understanding of key ideas. The report does not indicate an opinion about changes in the lengths of popular movies over time or fails to support an opinion.

**Project: Not What They Used to Be**

For use with Chapter 6

**OBJECTIVE** Decide if popular movies made after 1970 are shorter than popular movies made before that date.

**MATERIALS** paper, pencil, computer (optional)

**INVESTIGATION** One movie critic claims that popular movies in the 1970s were very short compared to the lengths of older movies. Popular movies can be defined as ones that are box office hits. Find the length of two non-animated box office hits from before 1970, three from the 1970s, three from the 1980s, and three from the 1990s. The lengths of many movies can be found at the web site <http://www.cinemedia.net> or the Library of Congress catalog.

1. Write a compound inequality that represents the lengths of movies between the lengths of the two pre-1970 movies you found.
2. Find the mean length of the three 1970s movies you found. Do the same for the three 1980s movies and for the three 1990s movies.
3. Graph the inequality from Exercise 1 on a number line and plot the means from Exercise 2 on the same number line. Which means are solutions to the inequality?
4. Make a box-and-whisker plot for the 11 movie lengths you found. Are the movies from before 1970 in the upper quartile?

**PRESENT YOUR RESULTS** Write a report presenting your results. Include your inequality, means, number line, and box-and-whisker plot. Discuss what the results imply for the lengths of popular movies in each decade. Were popular movies in the 1970s shorter than earlier movies? Were they in the 1980s? 1990s? Which graph gives a clearer answer, the number line or the box-and-whisker plot?

## Rubric For Popular Movies Project:

<b>Technical Requirements:</b> Find: -Two (2) movies from before 1970 -Three (3) movies from the 1970s -Three (3) movies from the 1980s -Three (3) movies from the 1990s -Proper display and presentation of graphics and information.		Points 10 → 5 → 0 →	SWR EE ME NI 2.1.1
<b>A. Academic Requirements</b> - Find the lengths of movies between the two pre-1970 movies you found. - Write the inequality that represents the length of the two pre-1970 movies. - Graph the inequality on a number line	All information, calculations and graphs are accurate and presented well.  Some information, calculations and graphs are accurate and presented well  No information is accurate or presented well.	10 → → 5 → → 0 →	EE ME NI 1.3.1
<b>B.</b> -Find the mean length of the three 1970's movies. -Find the mean length of the three 1980's movies -Find the mean length of the three 1990's movies	All calculations are accurate.  Some calculations are accurate.  No calculations are accurate.	10 → → 5 → → 0 →	EE ME NI 1.3.1
-Graph the Means from (B) on the number line graphed from the inequality in (A). -Make a Box and Whisker Plot for the 11 movie lengths.	All graphs are accurate and presented well.  Some graphs are accurate and presented well  No information is accurate or presented	15 → → 10 → → 0 →	EE ME NI 1.3.1
<b>C. Answer the following:</b> - Which means from (B) are part of the solution set of the inequality.  - Are the movies from before 1970 In the upper quartile of the Box and Whisker Plot?	Analysis of data is correct and shows ability to synthesize and represent information in various forms.  Some ability is demonstrated.  No ability is demonstrated	15 → → 10 → → 0 →	EE ME NI 1.4.1
-Write a report presenting your results, include the inequality, means, number line, and box and whisker plot. -Discuss what the results imply for the lengths of popular movies in each decade.	Student demonstrates proficiency in writing per 1.1.1 Student demonstrates some proficiency in writing. Student demonstrates no proficiency in writing	15 → → 10 → → 0 →	EE ME NI 1.1.1
- Were the popular movies of the 1970s shorter than earlier movies? -Were they in the 1980s? 1990s? -Which graph gives the clearest answer?	Student demonstrates proficiency in information synthesis and forming conclusions Some proficiency No Proficiency	15 → → 10 → → 0 →	EE ME NI 1.2.1