

Name: _____

Math 203: Contemporary Mathematics

Chapter 8 test, version (a)

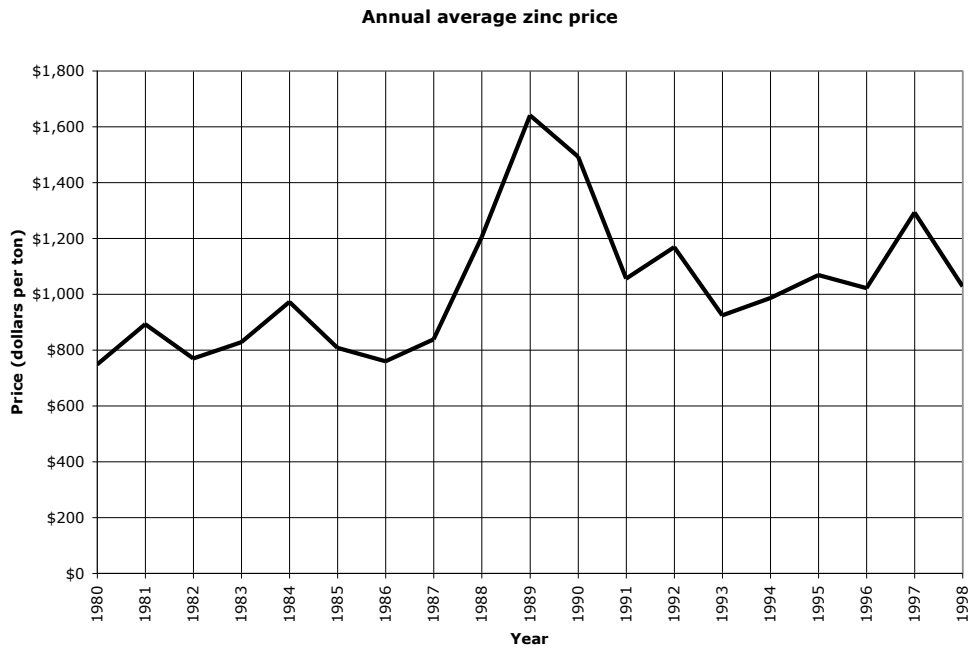
Thursday, February 26, 2009

60 points

Instructions:

1. This test has 5 pages (including this one), which contain 4 questions. Please check that you have all of the pages.
 2. Read each question carefully. If you have any questions, please ask.
 3. Answer all of the following questions clearly and completely. Justify all of your answers. Most of the points you receive will be based on the accuracy, completeness, and clarity of your responses. Use full sentences, and avoid saying things that are untrue, ambiguous, or nonsensical.
 4. You may use a calculator for this test, but you may not use a book or any notes.
 5. Give your answer to each question completely and clearly in the space provided. You may use the back of the test pages for scratch work; however, if you want this work to be considered, please make note of it in the space provided for the question.
 6. Erase or cross out work you do not wish to be graded.
 7. You have 25 minutes to complete this test. Good luck!
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Question 1. (12 points.) The price of zinc (a silvery-white metal used in alloys and to protect steel from corrosion) fluctuates from year to year. The following line graph shows the average price in dollars per ton for zinc from 1980 to 1998.



Source: U.S. Geological Survey Mineral Resources Program,
<http://minerals.usgs.gov/minerals/pubs/commodity/zinc/720798.pdf>

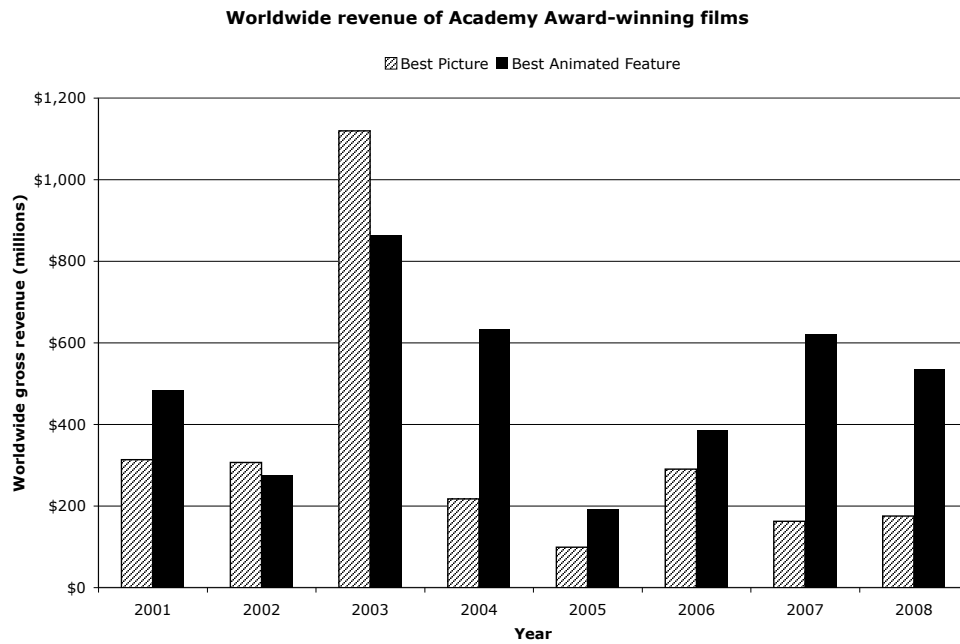
- (a) (3 points.) What was the greatest average price of zinc in this time period, and in what year(s) did it occur?

- (b) (3 points.) What was the smallest average price of zinc in this time period, and in what year(s) did it occur?

- (c) (3 points.) Between which two consecutive years did the greatest *decrease* in price occur?

- (d) (3 points.) In which year(s) was the average price of zinc closest to \$800 per ton?

Question 2. (10 points.) The following graph displays the worldwide gross revenue for the films that have won the Academy Award for Best Picture and for Best Animated Feature for the years 2001 through 2008.



Source: Box Office Mojo.

- (a) (3 points.) Estimate the worldwide gross revenue for the Best Picture of 2008 and for the Best Animated Feature of 2008.

- (b) (3 points.) In what year(s) was there the largest difference between the revenues of the two films?

- (c) (4 points.) Describe an interesting fact or phenomenon you observe from looking at this graph.

Question 3. (24 points.) Alpha Industries and Bravo Corporation are two competing companies that manufacture the machines that put the little plastic bits on the ends of shoelaces. In the last year, the following information about machine failures was recorded:

Brand	Machines installed	Failures	Failure rate
Alpha	3,290	286	8.7%
Bravo	8,431	438	5.2%

(a) (8 points.) You have been hired to make a sales brochure for Alpha Industries. Neatly draw an appropriate graph based on the data in the table above that makes Alpha's product look better than Bravo's product.

(b) (8 points.) The day after you finish Alpha's brochure, you are hired by Bravo to make a brochure for *their* product. Neatly draw an appropriate graph based on the table above that makes Bravo's product look better than Alpha's.

- (c) (8 points.) Both of the graphs you drew in parts (a) and (b) were based on accurate information. So how is it possible that the two graphs seem to lead to opposite conclusions? What might be misleading about the graphs you drew?

Question 4. (14 points.) Suppose you have found a table that gives the height of each player on a basketball team. You would like to make a graph that makes it easy to see how this data is distributed (what the most common height is, whether there are any outliers, etc.). What would be an appropriate choice of graph? Justify your answer as clearly and as completely as you can.

Name: _____

Math 203: Contemporary Mathematics

Chapter 8 test, version (b)

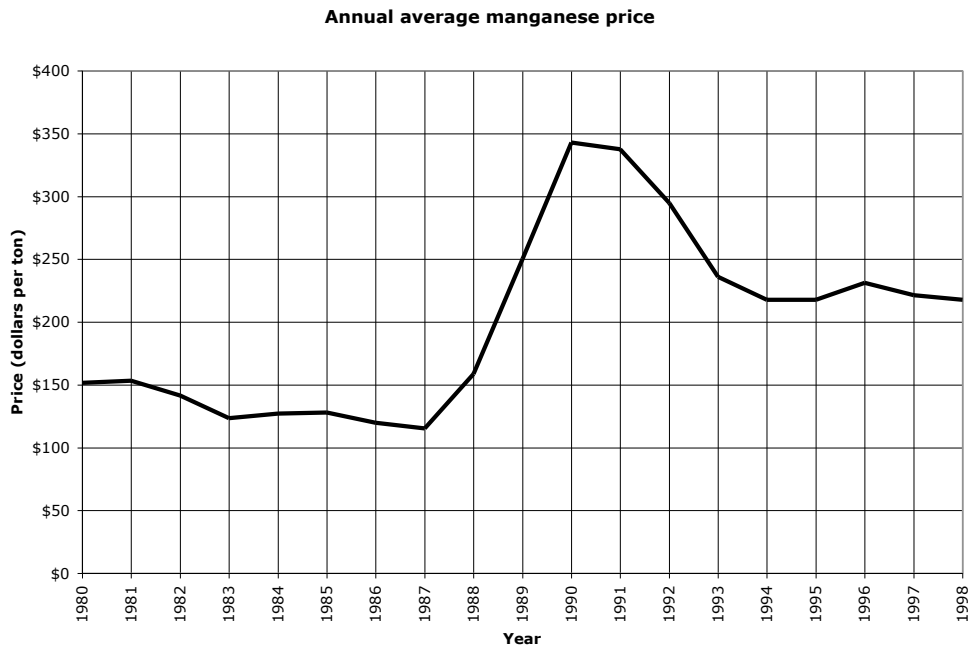
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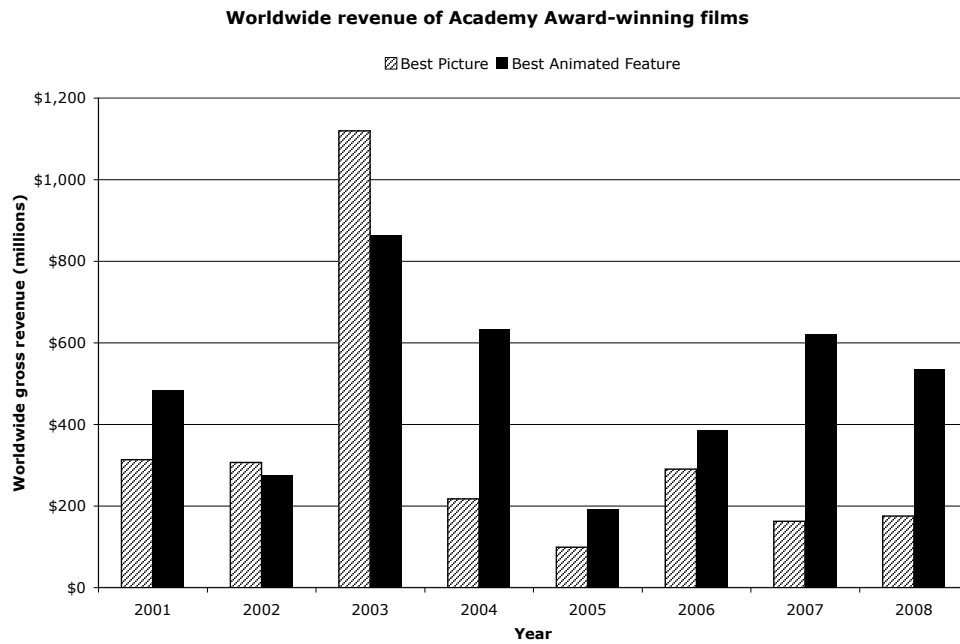
Question 1. (12 points.) The price of manganese (a hard gray metal commonly used as an ingredient in stainless steel) fluctuates from year to year. The following line graph shows the average price in dollars per ton for manganese from 1980 to 1998.



Source: U. S. Geological Survey Mineral Resources Program,
<http://minerals.usgs.gov/minerals/pubs/commodity/manganese/420798.pdf>

- (a) (3 points.) What was the greatest average price of manganese in this time period, and in what year(s) did it occur?
- (b) (3 points.) What was the smallest average price of manganese in this time period, and in what year(s) did it occur?
- (c) (3 points.) Between which two consecutive years did the greatest *decrease* in price occur?
- (d) (3 points.) In which year(s) was the average price of manganese closest to \$300 per ton?

Question 2. (10 points.) The following graph displays the worldwide gross revenue for the films that have won the Academy Award for Best Picture and for Best Animated Feature for the years 2001 through 2008.



Source: Box Office Mojo.

- (a) (3 points.) Estimate the worldwide gross revenue for the Best Picture of 2008 and for the Best Animated Feature of 2008.
- (b) (3 points.) In what year(s) was there the largest difference between the revenues of the two films?
- (c) (4 points.) Describe an interesting fact or phenomenon you observe from looking at this graph.

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