



Arkansas Comprehensive Testing, Assessment, and Accountability Program

Released Item Booklet

Benchmark Examination Grade 7

April 2007
Administration

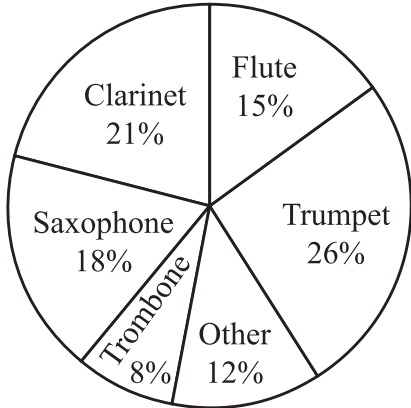
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Arkansas Department of Education

CALCULATOR NOT PERMITTED—ITEMS 1–8

1. The circle graph below displays the percentage of the band represented by each instrument at last week's band clinic.

Band Camp Participation



If 150 students attended the band clinic, how many students were in the two largest groups combined?

- A. 39
 B. 47
 C. 66
 * D. 71
2. Which polygon is formed by plotting and connecting ordered pairs $(1, -1)$, $(-2, -1)$, $(-4, 4)$, $(-2, 6)$, $(1, 6)$, $(3, 4)$, and $(3, 1)$?
- A. octagon
 B. hexagon
 * C. heptagon
 D. nonagon

3. The table below represents the equation $y = 2x + 1$.

x	y
4	
7	
0	

What are the missing values for y ?

- A. 7 10 3
 B. 10 16 2
 C. 7 13 -1
 * D. 9 15 1
4. What is the distance between -2 and 4 on a number line?
- A. -8
 B. -6
 C. 2
 * D. 6
5. The coordinates for point M are $(-4, -5)$. In which quadrant would point M be located?
- A. Quadrant I
 B. Quadrant II
 * C. Quadrant III
 D. Quadrant IV

6. If $a = 2$, $b = 5$, and $c = 3$, what is the value of the algebraic expression below?

$$a^2 + ab + c$$

- A. 12
 - * B. 17
 - C. 27
 - D. 64
7. What is the solution to the equation below?

$$-\frac{24}{3} + (-5) - (-4) = x$$

- A. $x = 7$
- B. $x = -1$
- C. $x = -2$
- * D. $x = -9$

8. What is the equation for the table below?

x	y
2	5
3	8
5	14
8	23

- A. $y = 2x + 1$
- * B. $y = 3x - 1$
- C. $y = 2x + 4$
- D. $y = 4x - 3^2$

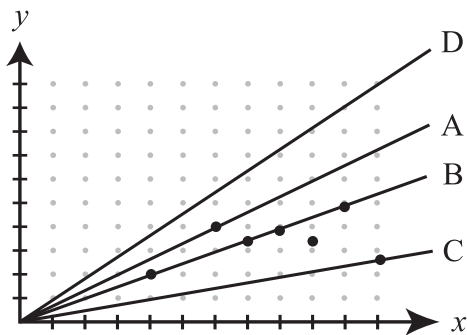
CALCULATOR PERMITTED—ITEMS 9–40

9. The table below represents the equation $y = \frac{2}{3}x - 1$. What are the missing values?

x	y
6	
	5
-3	

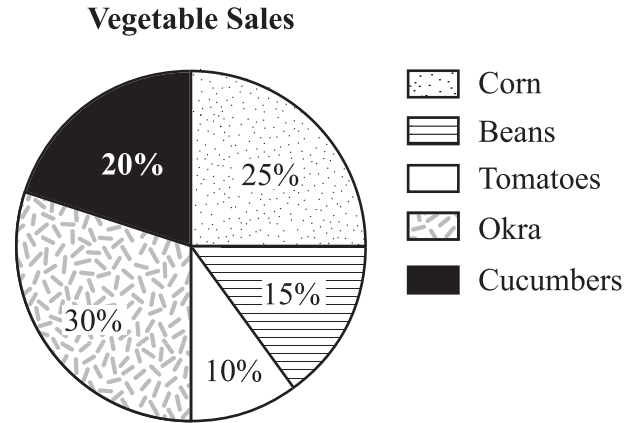
- * A. 3 9 -3
- B. 1 18 -2
- C. 8 4 $-\frac{11}{2}$
- D. $\frac{10}{3}$ $\frac{17}{2}$ $-\frac{8}{3}$

10. Which is the line of best fit for the data points below?



- A. line A
- * B. line B
- C. line C
- D. line D

11. The circle graph below represents Linda's sales at the farmer's market last summer.



What vegetable had half the sales of okra?

- A. corn
 - * B. beans
 - C. tomatoes
 - D. cucumbers
12. Mark rode his bicycle 4 kilometers. How many meters did he ride?
- A. 40 meters
 - B. 400 meters
 - * C. 4,000 meters
 - D. 4,000,000 meters

13. Yesterday's math assignment had 42 questions. Bill solved only 1 out of 3 questions. What proportion shows how many problems Bill solved?

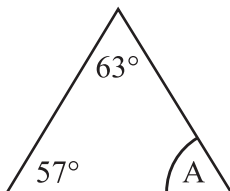
- * A. $\frac{1}{3} = \frac{x}{42}$
- B. $\frac{3}{1} = \frac{x}{42}$
- C. $\frac{14}{42} = \frac{x}{3}$
- D. $\frac{3}{42} = \frac{x}{42}$

14. What figure is represented below?



- A. right circular cone
- B. right triangular prism
- * C. right circular cylinder
- D. right rectangular pyramid

15. What is the measure of angle A in the triangle below?



- A. 43°
- B. 57°
- * C. 60°
- D. 63°

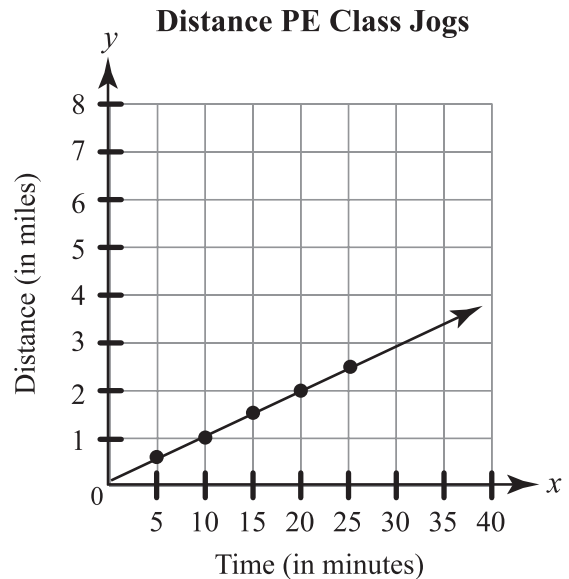
16. Solve the equation $x + 3 = -42$ for x .

- * A. $x = -45$
- B. $x = -39$
- C. $x = 39$
- D. $x = 45$

17. How many centimeters are in one kilometer?

- A. 10
- B. 100
- C. 1,000
- * D. 100,000

18. The physical education class jogged at a steady pace. According to the graph below, what was their rate?



- * A. 1 mile every 10 minutes
- B. 1 mile every 15 minutes
- C. 15 miles every $1\frac{1}{2}$ minutes
- D. 20 miles every 2 hours

19. Martha is 1 of 5 girls in the backstroke finals of the swim meet. Only the top 2 finishers of the race will receive ribbons. If 1 of the other girls has already finished, what is the probability of Martha receiving a ribbon?

- A. 0.20
- * B. 0.25
- C. 0.40
- D. 0.50

20. After school, John worked on his homework from 3:45 P.M. to 5:20 P.M. He took a break to eat supper. He started working again at 7:00 P.M. and finished at 7:50 P.M. What was the total amount of time John spent on his homework?

- A. 1 hour 45 minutes
- * B. 2 hours 25 minutes
- C. 2 hours 50 minutes
- D. 3 hours 55 minutes

21. A six-sided number cube, with its faces numbered 1–6, is rolled. What is the theoretical probability of rolling a number less than 7 on each roll?

- * A. 1
- B. $\frac{1}{2}$
- C. $\frac{5}{6}$
- D. $\frac{1}{6}$

22. What is the **greatest** common factor of 24, 84, and 148?

- A. 2
- * B. 4
- C. 12
- D. 24

23. Simplify the algebraic equation below by combining like terms.

$$3x + 2(x - 4) = 32$$

- A. $4x - 2 = 32$
- B. $3x = 32 - 2(x - 4)$
- C. $3x + 2x - 8 + 32$
- * D. $5x - 8 = 32$

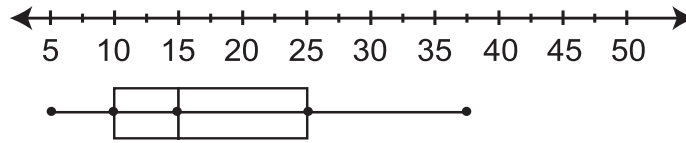
24. Sam surveyed 9 friends to find out how many days each had been absent from school. He got the responses below.

3 1.5 4 12 2.5 0 1 1 2

What is the median of these numbers?

- A. 1.0
- * B. 2.0
- C. 2.5
- D. 3.0

25. Average wind speeds over a two-week period are shown in the box-and-whisker plot below.



What is the upper (third) quartile?

- A. 10
- B. 20
- * C. 25
- D. 45

26. Ben is having a birthday pizza party. He orders 3 large pizzas. Each large pizza has 8 slices. If there are 7 people at the party and the pizzas are distributed equally, how many slices of pizza does each person get?

- A. 0.3 slices
- * B. $3\frac{3}{7}$ slices
- C. 4 slices
- D. $4\frac{3}{7}$ slices

27. Which of the following is the **correct** graph for the inequality below?

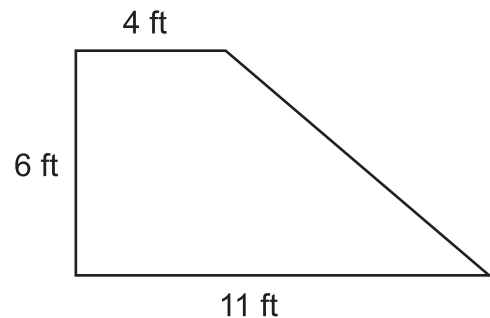
$$9x \geq 27$$

- * A.
- B.
- C.
- D.

28. One angle of a triangular pennant measures 68 degrees. If the measures of the other two angles equal each other, what is the measure of one of the other angles?

- * A. 56°
- B. 112°
- C. 146°
- D. 180°

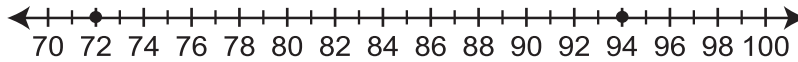
29. What is the area of the trapezoid below?



- A. 44 sq ft
- * B. 45 sq ft
- C. 66 sq ft
- D. 90 sq ft

PART II Released Mathematics Items—2007 Benchmark Grade 7

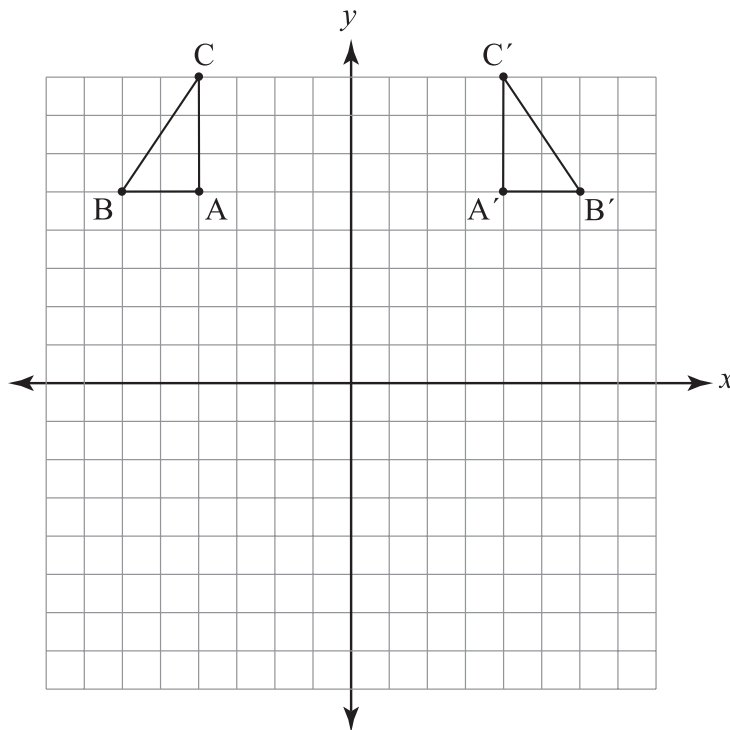
30. The cheerleaders are raising money to purchase new T-shirts. They already have \$72 in their account. Their goal is \$94.



What is the midpoint between their goal and the money they already have?

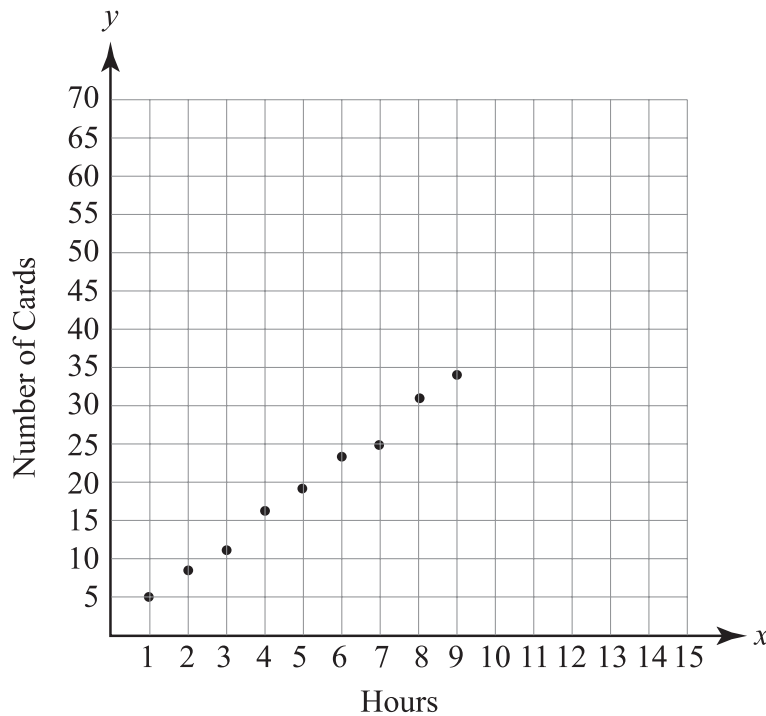
- A. \$22
- B. \$47
- * C. \$83
- D. \$85

31. The figure ABC below has been transformed to produce the image A'B'C'. What type of transformation has been done to produce A'B'C'?



- A. translation
- * B. reflection
- C. inversion
- D. rotation

32. Ginger is making homemade cards to send to friends and family. This scatterplot shows the total number of cards she had made after each hour she worked on the task. Which is the **best** prediction of the number of cards Ginger can make after 15 hours?



- A. 33
- B. 43
- * C. 53
- D. 68

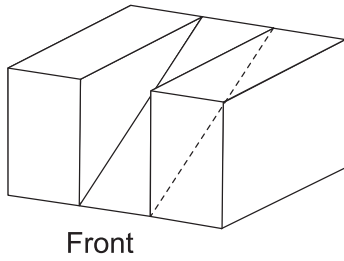
33. A plumber charges \$20.00 per hour plus a \$35.00 service call fee. If x represents the number of hours worked, and y represents the total charged, which equation shows the amount of money that will be charged on each service call?

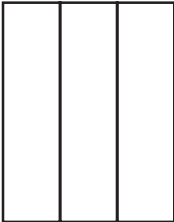
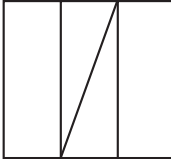
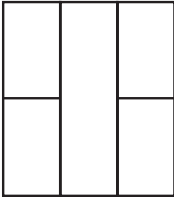
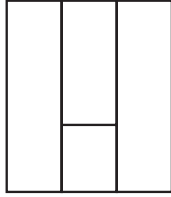
- A. $y = 35x + 20$
- B. $y = 35x - 20$
- * C. $y = 20x + 35$
- D. $y = 20x - 35$

34. At 4:00 P.M., the temperature in Alaska was 26 degrees F. By 4:00 P.M. the next day, the temperature was -34 degrees F. What was the absolute value of the temperature difference between the 2 days?

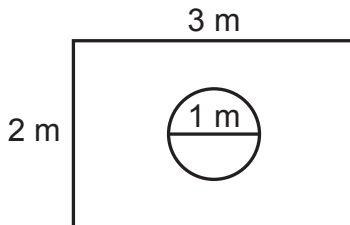
- A. -60°F
- B. -8°F
- C. 8°F
- * D. 60°F

35. What is the **correct** top view of the figure below?



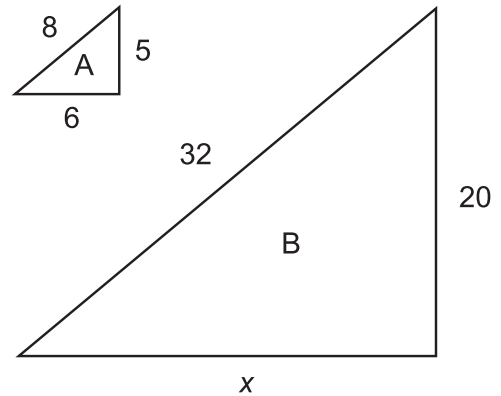
- * A. 
- B. 
- C. 
- D. 

36. Mrs. Johnson placed a birdbath in the middle of her flower garden, as shown below. The base of the birdbath is circular. How much area is left in the garden for the flowers? Use 3.14 as an approximation for π .

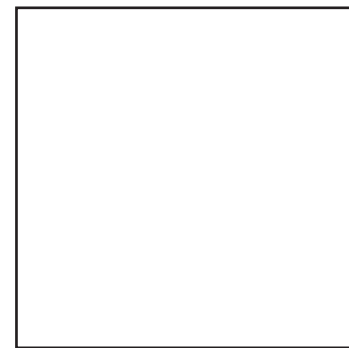


- A. 3.14 m^2
- B. 4.22 m^2
- * C. 5.22 m^2
- D. 8.86 m^2

37. The two triangles below are similar. What is the length of side x for triangle B?



- A. 15 units
- * B. 24 units
- C. 36 units
- D. 52 units
38. Lisa wants to carpet a square room. The perimeter of the room is 36 feet. How many square feet of carpeting will Lisa need?



$P = 36 \text{ ft}$

- A. 48 sq ft
- B. 72 sq ft
- * C. 81 sq ft
- D. 144 sq ft

39. A store has T-shirts on sale—buy 2 and get the third for $\frac{1}{2}$ price. A T-shirt's regular price is \$8.00 plus 7% sales tax. Juan buys 3 shirts. How much sales tax does he pay?

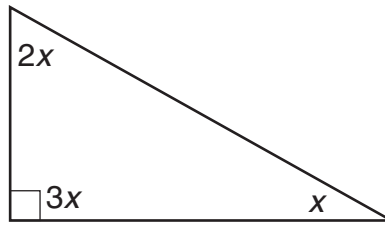
- * A. \$ 1.40
- B. \$ 1.68
- C. \$20.00
- D. \$24.00

40. The area of Colby's sandbox is 25 square feet. What is its perimeter?

- A. 5 feet
- B. $6\frac{1}{4}$ feet
- C. $12\frac{1}{2}$ feet
- * D. 20 feet

MATHEMATICS OPEN-RESPONSE ITEM A

- A. The triangle below has angle measures as shown.



1. Write an algebraic expression that can be used to show the relationship of the angle measures of this triangle.
2. Solve for x in the equation found in Part 1. Show each step of your work.
3. Calculate the measures of all three angles of this triangle. Show your work.

BE SURE TO LABEL YOUR RESPONSES 1, 2, AND 3.

RUBRIC FOR MATHEMATICS OPEN-RESPONSE ITEM A

SCORE	DESCRIPTION
4	The student earns 4 points. The response contains no incorrect work. The correct label of “°” or “degrees” is used in Part 3.
3	The student earns 3–3½ points.
2	The student earns 2–2½ points.
1	The student earns ½–1½ points, or some minimal understanding is shown.
0	The student earns 0 points. No understanding is shown.
B	Blank—No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” assigned for the item.)

MATHEMATICS OPEN-RESPONSE ITEM B

- B.** Suppose a bag contains 9 cubes, with 3 each of the colors brown, orange, and purple. The table shows the results after the experiment has been repeated 200 times by picking a cube from the bag, recording its color, and putting it back in the bag.

Outcome	Frequency
brown	64
orange	70
purple	66

1. What is the experimental probability of drawing an orange cube? Show your work and/or explain your answer in simplest terms.
2. What is the experimental probability of drawing a cube that is **not** purple? Show your work and/or explain your answer in simplest terms.
3. What is the experimental probability of drawing a cube that is either brown or purple? Show your work and/or explain your answer in simplest terms.
4. How did the experimental results in Part 3 compare to the theoretical probability? Show your work and/or explain your answer.

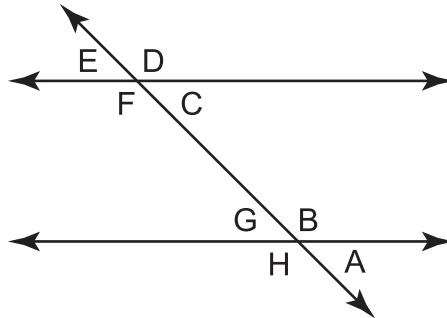
BE SURE TO LABEL YOUR RESPONSES 1, 2, 3, AND 4.

RUBRIC FOR MATHEMATICS OPEN-RESPONSE ITEM B

SCORE	DESCRIPTION
4	The student earns 4 points. The response contains no incorrect work.
3	The student earns 3–3½ points.
2	The student earns 2–2½ points.
1	The student earns ½–1½ points, or some minimal understanding is shown.
0	The student earns 0 points. No understanding is shown.
B	Blank—No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” assigned for the item.)

MATHEMATICS OPEN-RESPONSE ITEM C

C. The figure below shows two parallel lines cut by a transversal.



1. If angle H measures 135 degrees, what is the measure of angle A? Show your work.
2. List all angles in the figure that are equal to angle A.
3. List three **different** pairs of angles in the figure that are supplementary angles.

BE SURE TO LABEL YOUR RESPONSES 1, 2, AND 3.

RUBRIC FOR MATHEMATICS OPEN-RESPONSE ITEM C

SCORE	DESCRIPTION
4	The student earns 4 points. The response contains no incorrect work. The correct label of “°” or “degrees” is used in Part 1.
3	The student earns 3 points.
2	The student earns 2 points.
1	The student earns 1 point, or some minimal understanding is shown. Ex: Two correct pairs of supplementary angles and no incorrect angles in Part 3. Ex: Two \angle 's $\cong \angle A$ with no incorrect angles in Part 2.
0	The student earns 0 points. No understanding is shown.
B	Blank—No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” assigned for the item.)

PART II Released Mathematics Items—2007 Benchmark Grade 7

MATHEMATICS OPEN-RESPONSE ITEM D

- D.** Tai rode the bus to school. The bus left his house at 7:20 A.M. and arrived at school at 8:25 A.M. Tai’s mother picked him up after school at 3:35 P.M., and they arrived at home at 3:50 P.M.
1. How long was Tai on the bus? Show your work.
 2. What is the total time Tai spent traveling to and from school? Show your work.
 3. Predict whether Tai will ride the bus or go with his mother if he wants to save time traveling to or from school. How much time will he save? Explain your answer.

BE SURE TO LABEL YOUR RESPONSES 1, 2, AND 3.

RUBRIC FOR MATHEMATICS OPEN-RESPONSE ITEM D

SCORE	DESCRIPTION
4	The student earns 4 points. The response contains no incorrect work. The correct labels are used in all parts.
3	The student earns 3–3½ points.
2	The student earns 2–2½ points.
1	The student earns ½–1½ points, or some minimal understanding is shown.
0	The student earns 0 points. No understanding is shown.
B	Blank—No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” assigned for the item.)

PART II Released Mathematics Items—2007 Benchmark Grade 7

MATHEMATICS OPEN-RESPONSE ITEM E

- E. Nellie has \$87.00 in her checking account. She wrote a check for \$95.38. The bank charged her a \$20.00 insufficient funds fee for not having enough money in her account.
1. How much more was the amount of the check than the balance in Nellie’s account? Show your work.
 2. Write an equation to show how much Nellie would need to deposit in her account to cover her check and the insufficient funds fee. Let x = amount deposited. Show your work.
 3. Solve the equation found in Part 2. Show your work.

BE SURE TO LABEL YOUR RESPONSES 1, 2, AND 3.

RUBRIC FOR MATHEMATICS OPEN-RESPONSE ITEM E

SCORE	DESCRIPTION
4	The student earns 4 points. The response contains no incorrect work. The correct label of “\$” is used.
3	The student earns 3 points.
2	The student earns 2 points.
1	The student earns 1 point, or some minimal understanding is shown.
0	The student earns 0 points. No understanding is shown.
B	Blank—No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” assigned for the item.)