# NEW YORK STATE
# COMPONENT RETEST

# MATHEMATICS A
# COMPONENT 5
# MODULE 2

# TUESDAY, MAY 13, 2003

# SCORING KEY
# AND
# RATING GUIDE

**Multiple Choice Key**

| | |
|---|---|
| 1 | 1 |
| 2 | 1 |
| 3 | 2 |
| 4 | 3 |
| 5 | 4 |
| 6 | 4 |

**Math A Component Retest**
**May 2003**
**Component 5, Module 2**

## Key to Multiple-Choice Questions

| | |
|---|---|
| (1) | 1 |
| (2) | 1 |
| (3) | 2 |
| (4) | 3 |
| (5) | 4 |
| (6) | 4 |

## Rubric

(7)

**[ 4 ]** 26, and appropriate work is shown, such as $(9 \times 6) - \left(3^2\pi\right)$.

**[ 3 ]** Appropriate work is shown, but one computational or rounding error is made.

***or***

**[ 3 ]** Appropriate work is shown, but the answer is left in terms of $\pi$.

**[ 2 ]** Appropriate work is shown, but more than one computational or rounding error is made.

***or***

**[ 2 ]** The correct area of the rectangle and the correct area of the circle are found, but the two areas are not subtracted.

***or***

**[ 2 ]** One of the areas is determined incorrectly using an incorrect formula, but the area of the rock garden is found appropriately.

**[ 1 ]** Both the area of the rectangle and the area of the circle are determined incorrectly, but an appropriate area of the rock garden is found.

***or***

**[ 1 ]** Only the area of the circle is determined correctly, and no further correct work is shown.

***or***

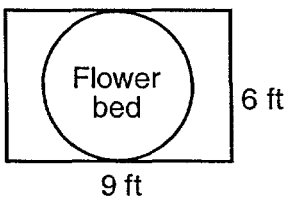
**[ 1 ]** 26, but no work is shown.

**[ 0 ]** A zero response is completely incorrect, irrelevant, or incoherent, or is a correct response that was obtained by an obviously incorrect procedure.

## Part II

**Answer all questions in this part. Each correct answer will receive 4 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. [12]**

7 Anita has a rectangular garden, as shown in the accompanying diagram. She would like to plant a circular flower bed in the center and use the rest of the space for a rock garden. The length and width of the rectangular garden are 9 feet and 6 feet, respectively. Find, to the *nearest square foot*, the area of the rock garden.




$l \cdot w$

$A = 6 \cdot 9 = 54$

$3.1416\ 3^2$

$3.1416 \cdot 9$

$54$

$-28.2744$

$A = 25.7256$

26

**SCORE POINT: 4**

## Part II

**Answer all questions in this part. Each correct answer will receive 4 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. [12]**

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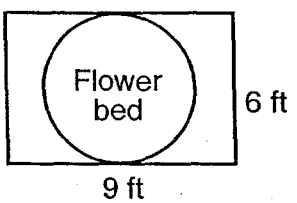


Area of garden = lw
= 9 · 6
= 54 feet²

Area of circle = πr²
= π(3)²
= π(9) ≈ 28.2743

Area of garden − Area of circle =
54 − 28.2743
≈ 25.71257
≈ 25.7 feet²

**SCORE POINT: 3**

## Part II

**Answer all questions in this part. Each correct answer will receive 4 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. [12]**

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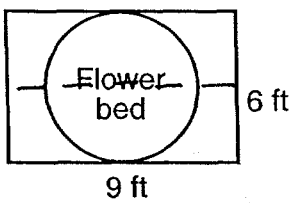


$A = LW$
$A = 9(6)$
$A = 54$

$A = \pi r^2$
$A = \pi (4)$
$A = 12.566$

$$\begin{array}{r} 54 \\ -12.566 \\ \hline 41.444 \end{array}$$

41 feet

**SCORE POINT: 2**

## Part II

**Answer all questions in this part. Each correct answer will receive 4 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. [12]**

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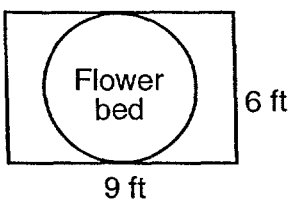



$6 \times 9 = 45$ $6\pi = 18$

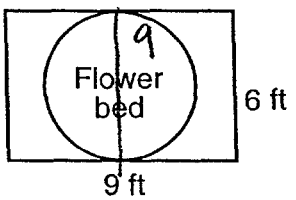
$45 - 18 = 27$

**SCORE POINT: 1**

## Part II

**Answer all questions in this part. Each correct answer will receive 4 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. [12]**

7 Anita has a rectangular garden, as shown in the accompanying diagram. She would like to plant a circular flower bed in the center and use the rest of the space for a rock garden. The length and width of the rectangular garden are 9 feet and 6 feet, respectively. Find, to the *nearest square foot*, the area of the rock garden.




$A = \pi r^2$

$A = (3.14)(4.5)^2$

$A = 64 ft^2$

**SCORE POINT: 0**

## Rubric

(8)

[ 4 ] The frequency table is completed correctly, as shown below, and a correct histogram with appropriate labels on both axes and appropriate scales for scores and frequency is constructed.

| Scores | Tally | Frequency |
|---|---|---|
| 91–100 | 𝍸 I | 6 |
| 81–90 | III | 3 |
| 71–80 | 𝍸 | 5 |
| 61–70 | IIII | 4 |
| 51–60 | I | 1 |

[ 3 ] The frequency table is incomplete, or one or two errors are made, but an appropriate histogram is drawn.

*or*

[ 3 ] The frequency table is completed correctly, but the histogram has no labels or scales or incorrect labels or scales.

*or*

[ 3 ] The frequency table is completed correctly, but an error is made on one bar of the histogram.

[ 2 ] The frequency table is completed correctly, but a correct bar graph is drawn with appropriate label and scales.

*or*

[ 2 ] The frequency table is completed correctly, but more than one error is made on the histogram.

*or*

[ 2 ] The frequency table has one or two errors, and one error is made in the histogram or no labels or incorrect labels are provided.

[ 1 ] The frequency table has one or two errors, and an appropriate bar graph is drawn with appropriate labels and scales.

*or*

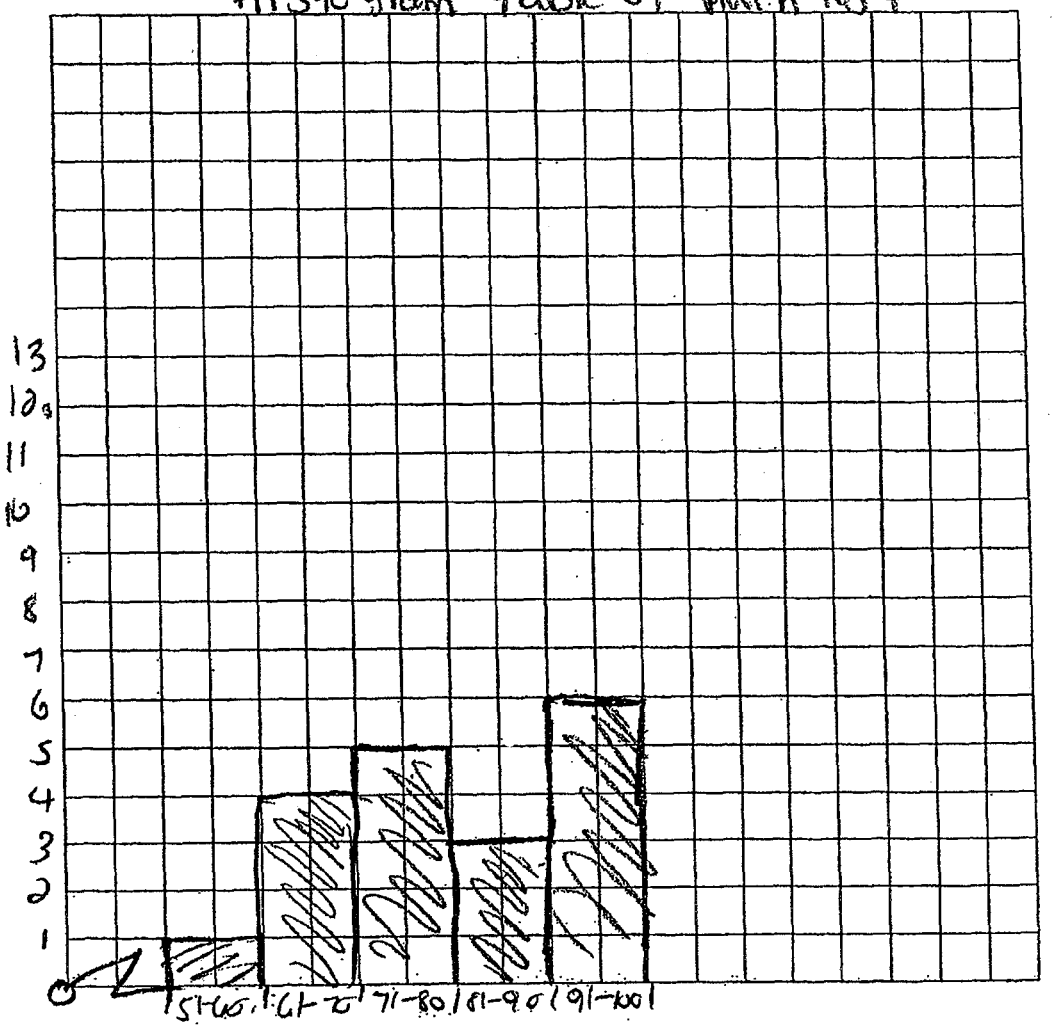
[ 1 ] The frequency table is completed correctly, but no further correct work is shown.

[ 0 ] A zero response is completely incorrect, irrelevant, or incoherent, or is a correct response that was obtained by an obviously incorrect procedure.

8 The scores on a mathematics test were 62, 83, 93, 78, 58, 97, 88, 84, 74, 80, 68, 96, 91, 74, 65, 92, 62, 71, and 93. Complete the frequency table and construct and label a frequency histogram on the grid below for the distribution of these scores.

| Scores | Tally | Frequency |
|---|---|---|
| 91–100 | 𝍸 \| \| \| \| | 6 |
| 81–90 | 𝍸 \| \| | 3 |
| 71–80 | 𝍸 \| \| \| | 5 |
| 61–70 | \| \| \| \| | 4 |
| 51–60 | \| | 1 |

Histogram table of math test




# of scores recieved

**SCORE POINT: 4**

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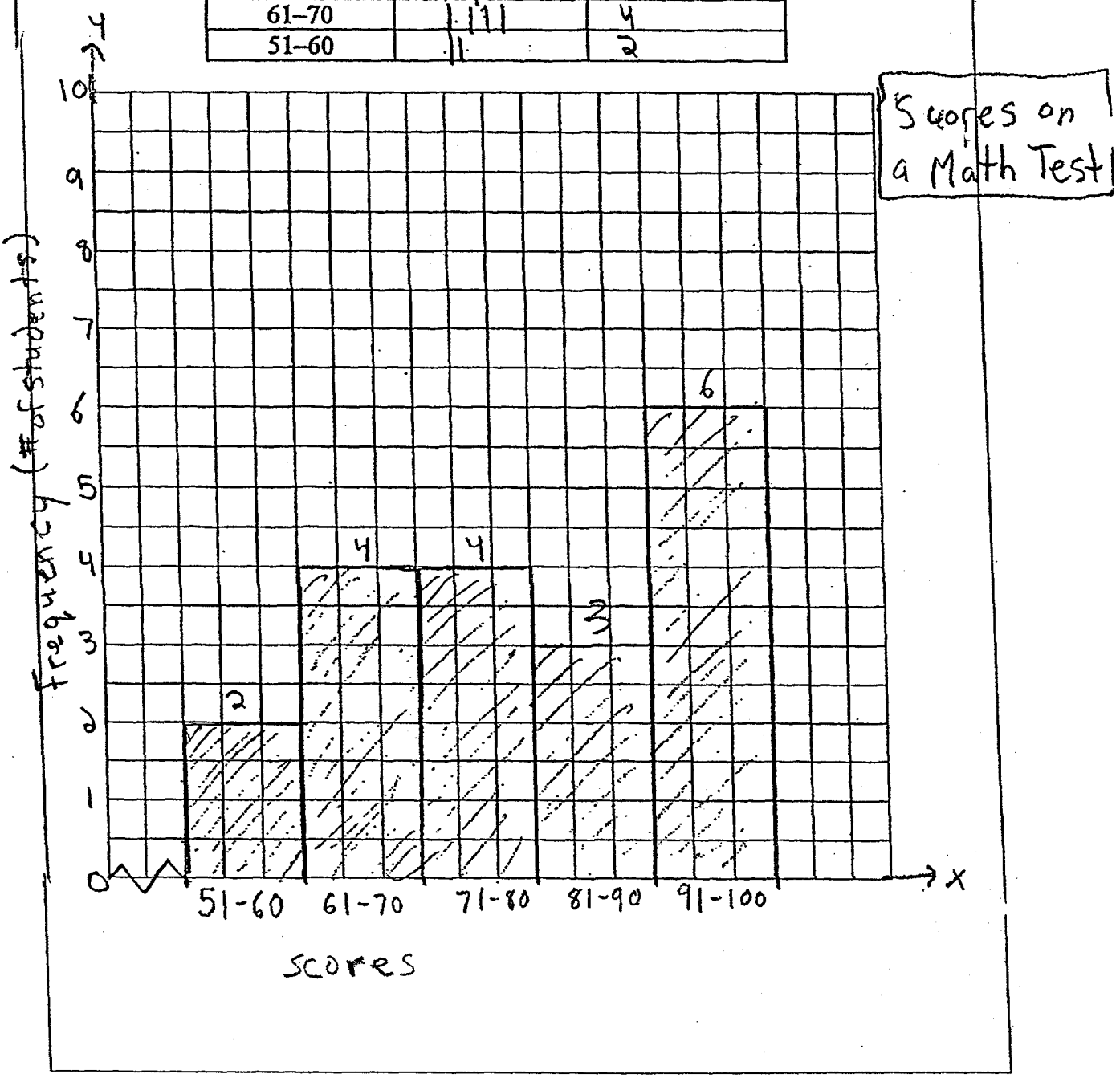
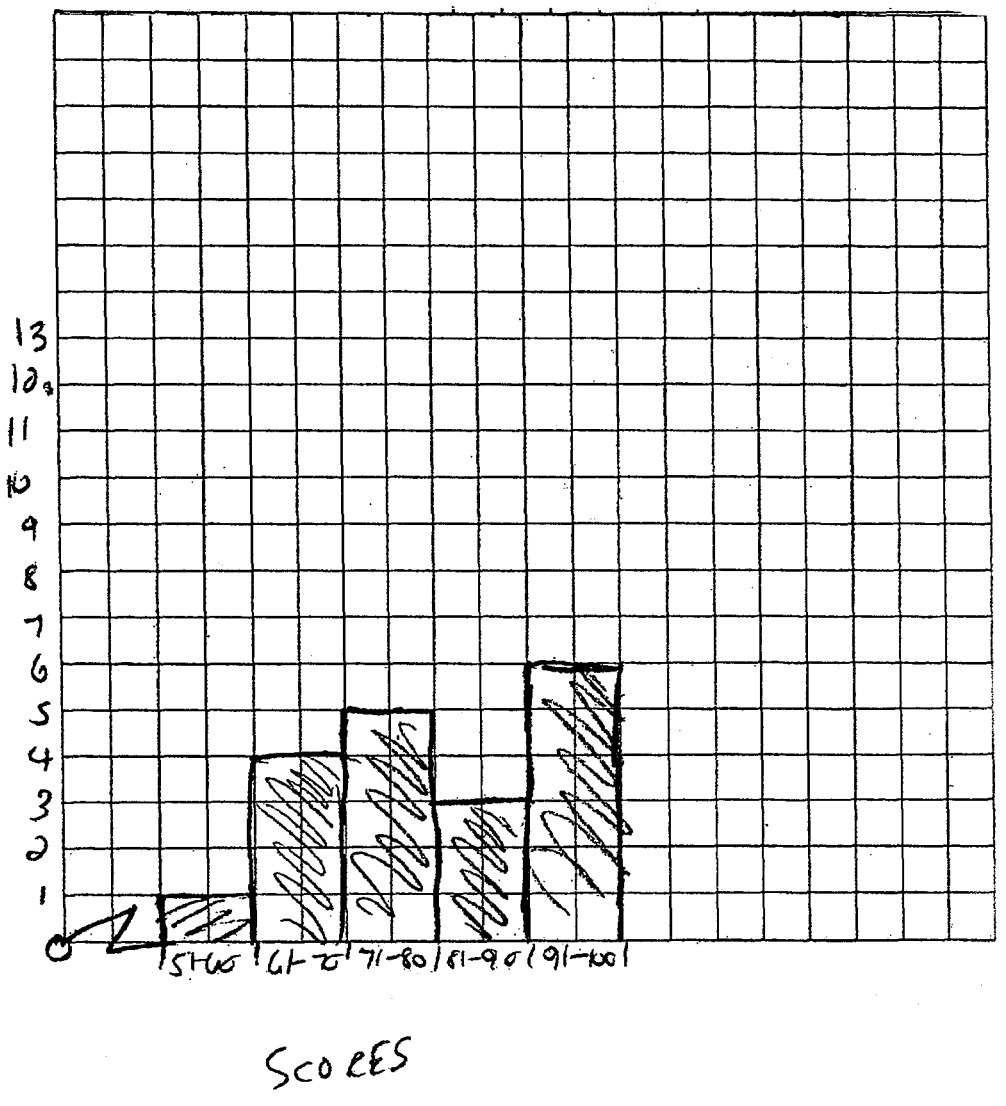
| Scores | Tally | Frequency |
|---|---|---|
| 91–100 | 𝍸 \| | 6 |
| 81–90 | \|\| | 3 |
| 71–80 | 𝍸 | 4 |
| 61–70 | 𝍸 | 4 |
| 51–60 | \|\| | 2 |




**SCORE POINT: 3**

8 The scores on a mathematics test were 62, 83, 93, 78, 58, 97, 88, 84, 74, 80, 68, 96, 91, 74, 65, 92, 62, 71, and 93. Complete the frequency table and construct and label a frequency histogram on the grid below for the distribution of these scores.

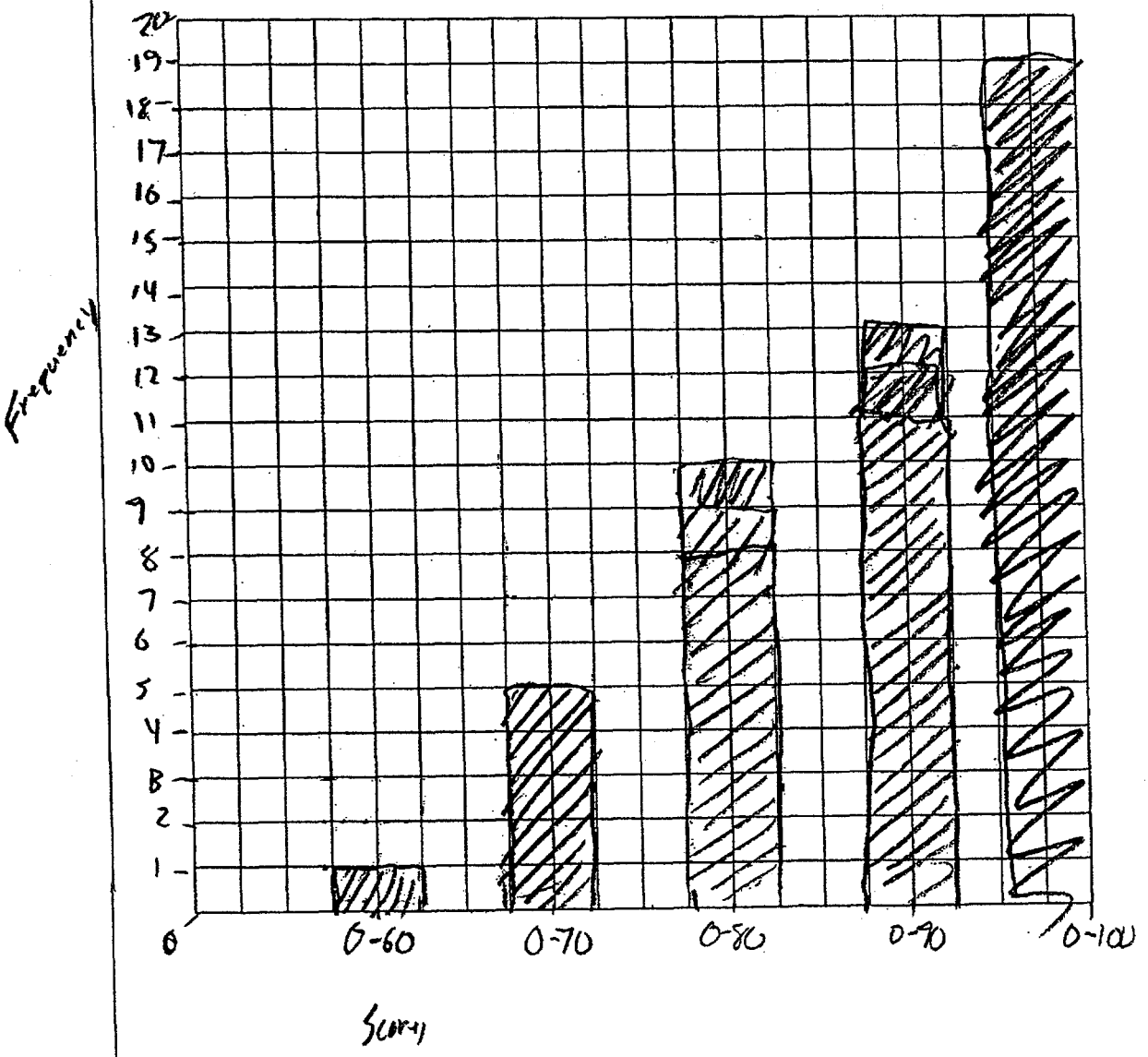
| Scores | Tally | Frequency |
|---|---|---|
| 91–100 | 𝍸 \| \| | 5 |
| 81–90 | \| \| \| | 3 |
| 71–80 | 𝍸 \| | 4 |
| 61–70 | 𝍸 | 4 |
| 51–60 | \| | 1 |




**SCORE POINT: 2**

8 The scores on a mathematics test were 62, 83, 93, 78, 58, 97, 88, 84, 74, 80, 68, 96, 91, 74, 65, 92, 62, 71, and 93. Complete the frequency table and construct and label a frequency histogram on the grid below for the distribution of these scores.

| Scores | Tally | Frequency |
|---|---|---|
| 91–100 | 𝍸 \| | 6 |
| 81–90 | \|\|\| | 3 |
| 71–80 | 𝍸 | 5 |
| 61–70 | \|\|\|\| | 4 |
| 51–60 | \| | 1 |




**SCORE POINT: 1**

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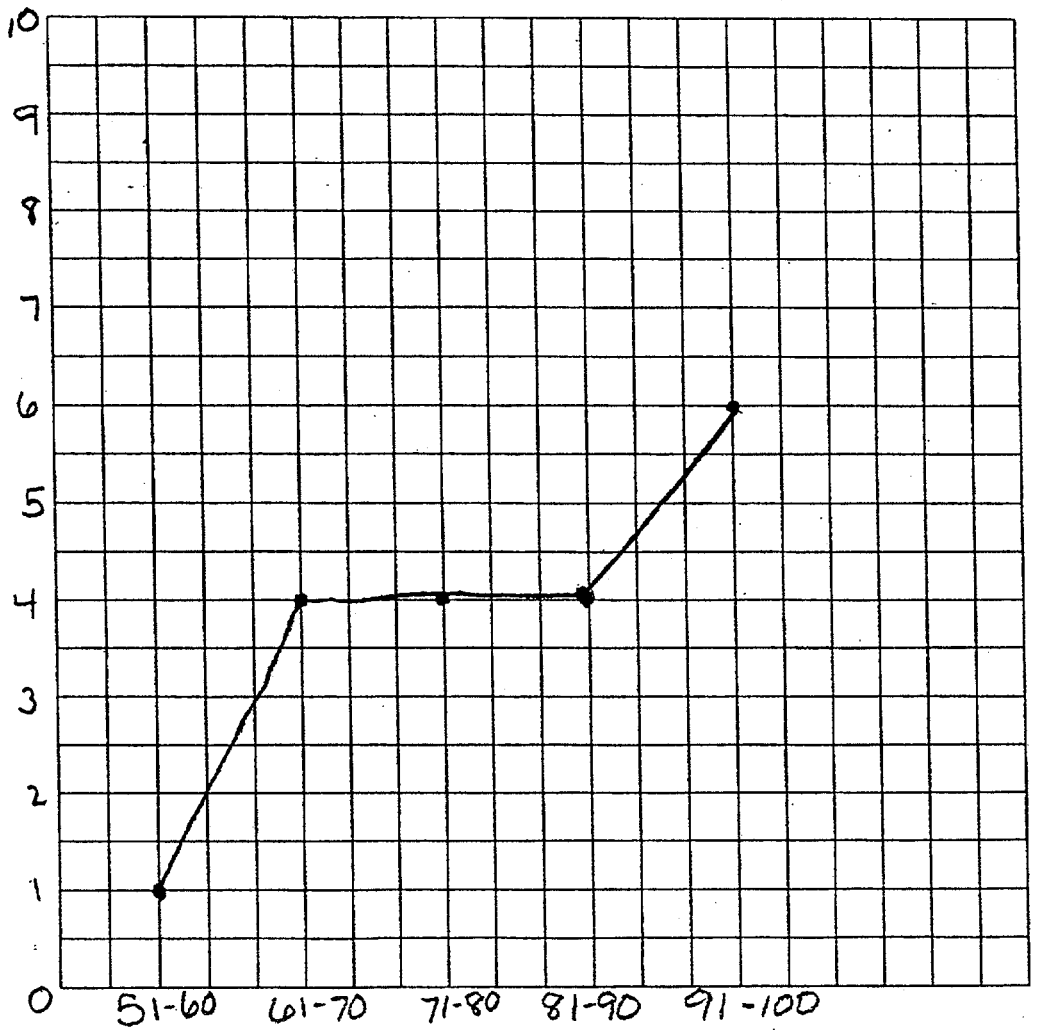
| 61–70 | 𝍸 | 4 |
| 51–60 | \| | 1 |




**SCORE POINT: 0**

## Rubric

(9)

**[ 4 ]** 15, and appropriate work is shown, such as $\frac{52 \times 30 \times 2}{3.5 \times 60}$.

**[ 3 ]** Appropriate work is shown, but one computational or rounding error is made.

***or***

**[ 3 ]** Appropriate work is shown, but the answer is expressed to the nearest minute.

**[ 2 ]** The volume is found incorrectly, but that value is used to find an appropriate number of hours.

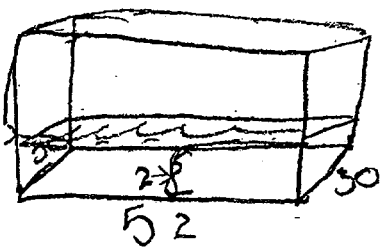
***or***

**[ 2 ]** Appropriate work is shown, but more than one computational or rounding error is made.

**[ 1 ]** 15, but no work is shown.

**[ 0 ]** A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

9 After a heavy rainstorm, Mr. Barone rented a pump to remove the water from his flooded basement. His basement is rectangular, with a length of 52 feet and a width of 30 feet. The water was 2 feet deep. The pump removes water at a rate of 3.5 cubic feet per minute. How long will he have to run the pump to empty his basement, to the *nearest hour*?




$L \cdot W \cdot H = A$

$30 \cdot 52 \cdot 2 = A$

$3120 = A$

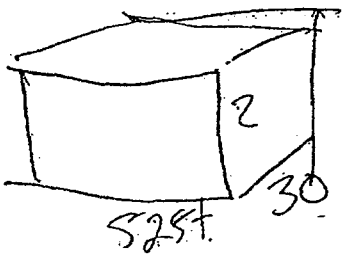
$3.5(60) =$

$3120 / 210 = 14.857$

The pump will have to run for 15 hours.

**SCORE POINT: 4**

9 After a heavy rainstorm, Mr. Barone rented a pump to remove the water from his flooded basement. His basement is rectangular, with a length of 52 feet and a width of 30 feet. The water was 2 feet deep. The pump removes water at a rate of 3.5 cubic feet per minute. How long will he have to run the pump to empty his basement, to the *nearest hour*?




3.5 ~~ft~~ per minute

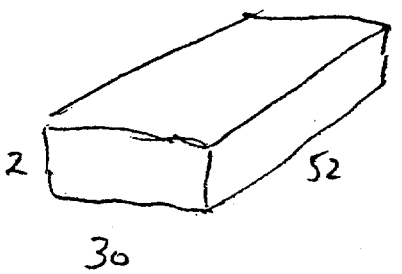
$V = 52 \cdot 30 \cdot 2$

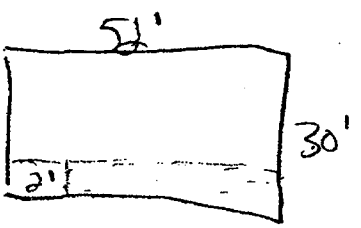
$V = 3120$

$3120 / 3.5 = 891$

**SCORE POINT: 3**

9 After a heavy rainstorm, Mr. Barone rented a pump to remove the water from his flooded basement. His basement is rectangular, with a length of 52 feet and a width of 30 feet. The water was 2 feet deep. The pump removes water at a rate of 3.5 cubic feet per minute. How long will he have to run the pump to empty his basement, to the *nearest hour*?




3.5 cubic feet per minute

V = lwh

52 x 30 x 2 = 3210

35 x 60 = 210 = 152.85

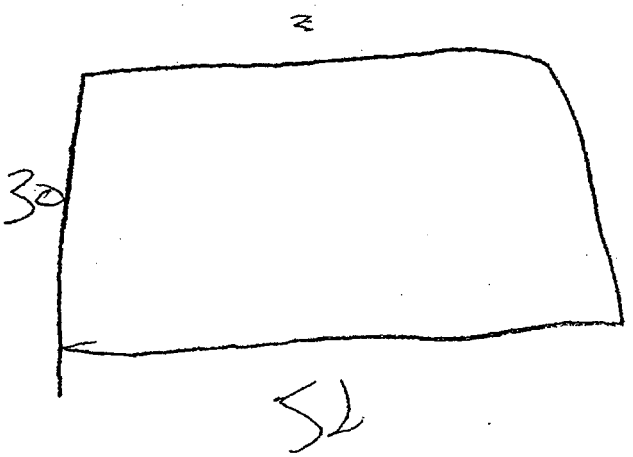
3210 ÷ 21 = 152.852

= 153

**SCORE POINT: 2**

9 After a heavy rainstorm, Mr. Barone rented a pump to remove the water from his flooded basement. His basement is rectangular, with a length of 52 feet and a width of 30 feet. The water was 2 feet deep. The pump removes water at a rate of 3.5 cubic feet per minute. How long will he have to run the pump to empty his basement, to the *nearest hour*?

15h 5




**SCORE POINT: 1**

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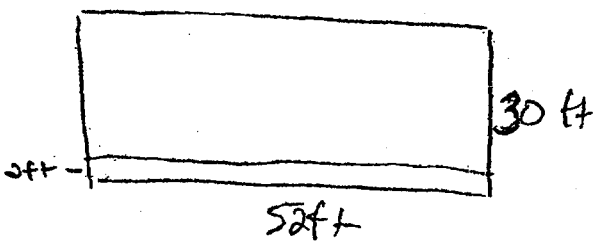


A = l × w

A = 52 × 30 = 1560 cu ft

A = 52 × 2 = 104 ft

$\frac{104}{3.5} = 29.7142857$

30 minutes

**SCORE POINT: 0**