

The Spring 2006 5th Grade MCAS exam has 39 questions , 5 of which are open response worth 4 points each. Each of the 34 multiple choice questions are worth 1 point each for a total test score of 54.

Question 10: Data Analysis, Statistics, and Probability

The table below shows a city's average temperature by month for the first six months of one year.

Average Temperature by Month

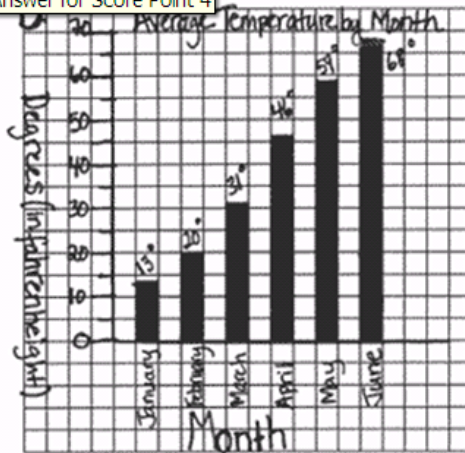
Month	Average Temperature (in Degrees Fahrenheit)
January	13°
February	20°
March	31°
April	46°
May	59°
June	68°

- What is the range of the data for these six months? Show or explain how you got your answer.
- On the grid in your Student Answer Booklet, make a bar graph to show the data in the table. Be sure to title your graph, label each axis, and use an appropriate scale.

**2006 MCAS
Grade 5 Mathematics
Question 10 - Score Point 4**

A. The range of the data is 55°F. The range is the difference between the minimum and the maximum, so I did $68 - 13 = 55$. That's how I got my answer of 55°F.

Answer for Score Point 4



Question 13

Molly sings in the chorus at her school. In the chorus, $\frac{3}{5}$ of the students are in the sixth grade, and the rest are in the fifth grade.

- What fraction of the students in the chorus are in the fifth grade? Show or explain how you got your answer.
- Write your answer from part (a) as a **percent**. Show or explain how you got your answer.
- There are 35 students in the chorus. What is the total number of students in the chorus who are in the fifth grade? Show or explain how you got your answer.

Ⓐ - I know that the whole thing would equal $\frac{5}{5}$. $\frac{5}{5} - \frac{3}{5}$ is $\frac{2}{5}$. I used the operation of subtraction because to find out how many people are in 5th grade, I would need to subtract the subtotal from the real total. $\frac{2}{5}$ means there are $\frac{2}{5}$ of the students in chorus that is in 5th grade.

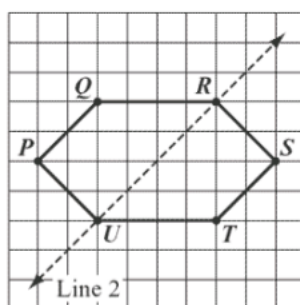
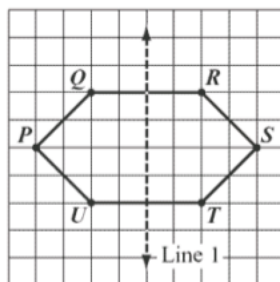
Ⓑ - I know that $\frac{5}{5}$ is 100%. $100\% \div 5$ is 20%. Since $\frac{1}{5}$ is 20%, $20\% \times 2$ is 40%. The answer 40% represents the answer from Part A in a percent.

Ⓒ - Since there is 35 peoples in all in the Chorus and there are 5 parts to the answer, $35 \div 5$ is 7. I knew that one part is 7, $\frac{2}{5}$ must be 14 peoples. The 14 peoples represents the number of peoples in 5th grade that is in chorus.

Question 17: Geometry



Hexagon $PQRSTU$ is shown in the diagrams below. In the first diagram, Line 1 passes through the midpoints of sides \overline{QR} and \overline{UT} . In the second diagram, Line 2 passes through vertices R and U .



- Is Line 1 a line of symmetry? Explain your reasoning.
- Is Line 2 a line of symmetry? Explain your reasoning.
- Is there a line other than Line 1 or Line 2 that is a line of symmetry for hexagon $PQRSTU$?
 - If there is another line of symmetry, describe where the line would be on the hexagon.
 - If there is not another line of symmetry, explain why not.

a. Line 1 is a line of symmetry. I know this because Line 1 is going right threw the center of hexagon $PQRSTU$ and on either side of Line 1 each shape is exactly the same and can be folded easily with each side matched up.

b. Line 2 is not a line of symmetry because even though on either side of Line 2 both sides are the same shape, if folded the lines on hexagon $PQRSTU$ will not match up with the other set of lines on the other side.

c. Yes there is a line other than Line 1 that is a line of symmetry for hexagon $PQRSTU$. The other line of symmetry would go right threw the middle of hexagon $PQRSTU$ which would have a line passing threw the vertices P and S.

Answer for Score Point

Question 27: Patterns, Relations, and Algebra



Jillian has a rowing machine. The table below lists the number of calories she burns when she exercises on her rowing machine.

**Calories Burned
Exercising on
Rowing Machine**

Minutes Exercised	Calories Burned
10	70
20	140
30	210

- Based on the data in the table, what is the total number of calories that Jillian burns in 1 minute? Show or explain how you got your answer.
- Based on your answer to part (a), what is the total number of calories that Jillian will burn if she exercises on her rowing machine for 25 minutes? Show or explain how you got your answer.
- Based on your answer to part (a), what is the total number of minutes that Jillian exercised if she burned 385 calories? Show or explain how you got your answer.

A. The number of calories Jillian will burn in 1 minute is 7. I know this because I know: $10 \text{ min.} \div 10 = 1 \text{ min.}$ and $70 \div 10 = 7 \text{ min.}$

B. The total number of calories that Jillian burns in 25 minutes is 175. I know this because if 1 minute burns 7 calories, then 25 minutes $\times 7$ would give me the answer.

$$\begin{array}{r} 25 \\ \times 7 \\ \hline 175 \end{array}$$

C. If Jillian burned 385 calories, she must have exercised 55 minutes. I know this because if in one minute 7 calories are burned, then $385 \div 7$ should give me the answer to how many minutes Jillian exercised!

$$\begin{array}{r} 55 \\ 7 \overline{)385} \\ \underline{35} \\ 35 \\ \underline{35} \\ 0 \end{array}$$

Question 31: Measurement



Harry planned a rectangular garden that was 40 feet long and 10 feet wide.

- What was the perimeter, in feet, of the garden that Harry planned? Show or explain how you got your answer.
- What was the area, in square feet, of the garden that Harry planned? Show or explain how you got your answer.
- Suppose Harry decided to change the shape of his garden to a square with the same area as the rectangle. What would be the perimeter, in feet, of the square garden? Show or explain how you got your answer.

Ⓐ The rectangular garden that Harry planned had 100 feet as its perimeter. How I got that answer is I ^{10f} 2x its length 40, = 80 + 2x its width 10, = 20. So $80 + 20 = 100$.

Ⓑ The area for Harry's garden plan was 400. All I did to get that answer was its length 40 x its width 10. $40 \times 10 = 400$.

Ⓒ If Harry wanted to change the shape to a square but keep the same area, 400, the perimeter of the square garden would be 80. It would be 80 because all sides would be 20 and 4x the length of a side $20 = 80$. $4 \times 20 = 80$.