

Midterm Review

Use the following questions to review for your *Midterm Test*. Your teacher will assign each question to a small group of students. Each group will prepare a display, then present solutions to the class. You may use the *Math Practices* page and the *Addition, Subtraction, and Multiplication Strategies Menu* pages in the Reference section. Show your work for all problems.

1. The Student Council at John Mills School organized a school-wide collection of footwear to donate to needy children. The table represents some of the items collected:

F Type of Footwear	N Number of Pairs Collected
Gym shoes	1297
Casual shoes	735
Boots	478

Use the data in the table and a paper-and-pencil method to solve the following problems. Estimate to be sure your answers are reasonable.

- How many more pairs of gym shoes were collected than casual shoes?
- How many fewer pairs of boots were collected than casual shoes?
- What is the total number of pairs of casual shoes and boots?
- The student councils at two neighboring schools also held a footwear donation drive. Each school collected an equal number of pairs of boots as John Mills School. How many total pairs of boots were collected?
- How many total pairs of footwear were collected at John Mills School?
- Write in words the total number of pairs of footwear collected at John Mills School.
- Show or tell how you can use mental math to solve Question 1A.
- Show or tell how you can use estimation to make sure your answer to Question 1D is reasonable.



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Student Guide

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Questions 1–4

- I. A. 562 more gym shoes;

$$\begin{array}{r} 1297 \\ - 735 \\ \hline 562 \end{array}$$

Compact Method

- B. 257 pairs of footwear;

$$\begin{array}{r} 6 \overline{) 735} \\ - 478 \\ \hline 257 \end{array}$$

Compact Method

$$\begin{array}{r} 600 + 120 + 15 \\ - 400 + 70 + 8 \\ \hline 200 + 50 + 7 \end{array}$$

Expanded Form

- C. 1213 pairs of boots and casual shoes;

$$\begin{array}{r} 735 \\ + 478 \\ \hline 1213 \end{array}$$

Compact Method

- D. 1434 pairs of boots;

$$\begin{array}{r} 2 \ 2 \\ 478 \\ \times 3 \\ \hline 1434 \end{array}$$

Compact Method

$$\begin{array}{r} 400 + 70 + 8 \\ \times 3 \\ \hline 1200 + 210 + 24 = 1434 \end{array}$$

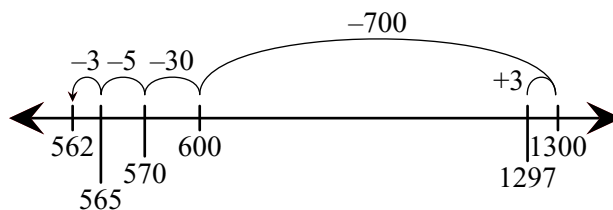
Expanded Form

- E. 2510 pairs of footwear;

$$1297 + 735 + 478 = 2510$$

- F. two thousand five hundred ten

- G. I thought about a number line. First I started at 1297 went forward 3 to 1300. I counted back 700 and landed on 600 and then counted back 30 to 570 and then 5 to 565. Finally, I knew I had to count back 3 more since I had added 3 in the beginning. I landed on 562 for my answer.



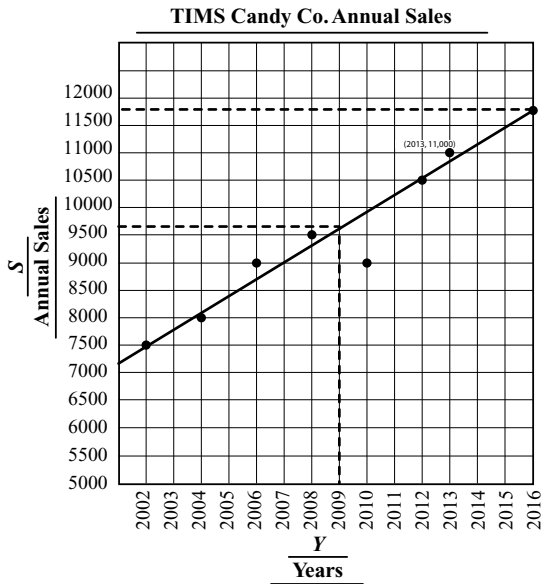
- H. I know that 478 is close to 500 so I thought 500×3 is 1500, so my answer needs to be less than 1500 since 478 is less than 500. My answer was 1434, so that is reasonable.

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2. A.

Year	Annual Candy Sales	Sales Rounded to Nearest \$500	Ordered Pair (Year, Sales)
2002	\$7349	\$7500	(2002, 7500)
2004	\$8168	\$8000	(2004, 8000)
2006	\$9199	\$9000	(2006, 9000)
2008	\$9445	\$9500	(2008, 9500)
2010	\$8830	\$9000	(2010, 9000)
2012	\$10,760	\$10,500	(2012, 11,000)

B–C. One possible graph and best-fit line:



- D. 2010; Answers will vary. Students may say that the line was still the same but that the data point for 2010 was below the line.
- E. Answers may vary but should be between \$9500 and \$10,000 for 2009; interpolation.
- F. Answers may vary but should be between \$10,500 and \$11,000 for 2016; extrapolation
- G. (2013, 11,000); Answers will vary but it is likely that this point will fall very close to the best-fit line.
- H. $10,000 + 1000 + 200 + 5 = 11,205$; eleven thousand two hundred five.

2. The table shows the annual candy sales for the TIMS Candy Company for some of the years between 2002 and 2012.

Y Year	S Annual Candy Sales	S Sales Rounded to Nearest \$500	Ordered Pair (Y, S)
2002	\$7349	\$7500	
2004	\$8168		
2006	\$9199		(2006, 9000)
2008	\$9445		
2010	\$8830		
2012	\$10,460		

- A. Copy the table. Complete the table by first rounding each price to the nearest \$500 and then writing the ordered pairs using the rounded values.
- B. Use the ordered pairs to make a point graph using *Centimeter Graph Paper*. Plot the Year on the horizontal axis starting with 2002. Include the years through 2016. Plot the Sales on the vertical axis starting with \$5000.
- C. If the points suggest a line, use your ruler to draw a best-fit line.
- D. In which year did the annual candy sales not go up? Did this data point change how you drew your best-fit line? If so, how did it change it? Explain.
- E. Use your graph to estimate the annual candy sales for 2009. Did you use interpolation or extrapolation?
- F. Use your graph to predict the annual candy sales for 2016. Did you use interpolation or extrapolation?
- G. The annual candy sales for 2013 were \$11,205. Round \$11,205 to the nearest \$500 and then plot this point on your graph. Does this point fall above or below your best-fit line?
- H. Write the number 11,205 in expanded form and using words.



3. Beth was tracking her progress improving her keyboarding skills. She tested herself often to check her progress then recorded the highest Number of Words Correct each week. She made the following data tables. Copy and complete the second table with the ordered pairs.

Week Tested	Number of Tests Taken	Week Tested	T Time in Seconds	N Number of Words Correct	Ordered Pairs (T, N)
Week 1	2	Week 1	30	11	
Week 2	5	Week 2	60	22	
Week 3	3	Week 3	90	38	
Week 4	2	Week 4	120	45	
Week 5	3	Week 5	150	60	

- What is the median number of tests Beth took per week? What is the mean?
- What is the median number of words correct?
- Make a point graph of Beth's progress using *Centimeter Graph Paper*. Choose a scale that will leave room to make predictions.
- If the points lie close to a straight line, use a ruler to draw a best-fit line.
- Predict the number of words correct Beth will have on a 180 second (3 minute) test. Explain how you made your estimate.
- Is Beth improving? Explain your reasoning.
- Are any of the numbers in the Number of Words Correct column of the data table prime numbers? If so, which ones? Show or tell how you know.
- What are the factors for the number of words Beth typed correctly in Week 4?



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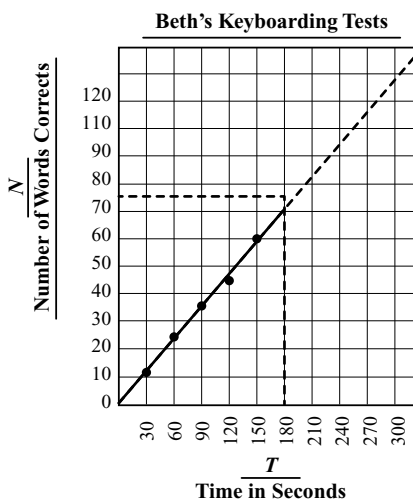
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3.

Week Tested	T Time in Seconds	N Number of Words Correct	Ordered Pairs (N, T)
Week 1	30	11	(30, 11)
Week 2	60	22	(60, 22)
Week 3	90	38	(90, 38)
Week 4	120	45	(120, 45)
Week 5	150	60	(150, 60)

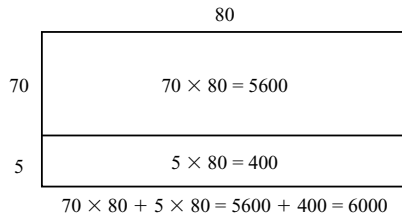
- The median is 3 tests; The mean is 3 tests
- 38 words correct
- D. One possible graph and best-fit line:



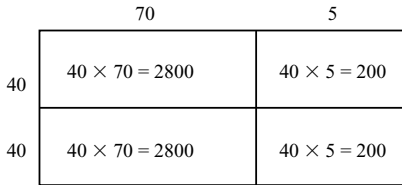
- About 75 words; I used my graph and best-fit line. I found 180 on the horizontal axis and then went up to the best-fit line and read across to the vertical axis.
- Students may say Beth is improving because of the slant of the line on the graph and the number of words on the table is increasing. However it is also taking her more time to complete each test. If Beth got 11 words correct in the 30 seconds you would expect her to get about 55 words correct in 150 seconds ($5 \times 30 = 150$ and $5 \times 11 = 55$). Beth got 60 words correct in 150 seconds, showing only a small improvement.
- Yes, 11 words in Week 1 is a prime number because it's only factors are 1 and 11.
- 1, 3, 5, 9, 15, 45

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4. A. 6000 sq. ft.; Possible response:



B. Possible response:



$40 \times 70 + 40 \times 70 + 40 \times 5 + 40 \times 5 = 2800 + 2800 + 200 + 200 = 6000$
 Or $40 \times 70 + 40 \times 5 = 3000$ and $3000 \times 2 = 6000$

C. 310 ft.; $75 + 75 + 80 + 80 = 310$ or $2 \times 75 + 2 \times 80 = 150 + 160 = 310$

D. 3605 sq. ft. remaining;
 water fountain area: $20 \times 20 = 400$
 slide area: $24 \times 30 = 720$
 swing area: $25 \times 35 = 875$
 mini-carousel area: $20 \times 20 = 400$;
 $400 + 720 + 875 + 400 = 2395$ and
 $6000 - 2395 = 3605$

E. 9605 sq. ft., 2×6000 sq. ft. = 12,000 sq. ft.
 and
 $12,000$ sq. ft. - 2395 sq. ft. = 9605 sq. ft.

4. The residents of TIMS Town wanted to build a small park. The Town Council agreed and began to plan for the new park. Here are some of the proposals:

- The total park will measure 75 feet X 80 feet.
- The water fountain will need an area of 20 X 20 feet.
- The slide area will need an area of 24 feet X 30 feet.
- The swing area will need an area of 25 feet X 35 feet.
- The mini-carousel will need an area of 20 X 20 feet.
- The remaining area may be used for benches and ball-play areas as well as landscaping.

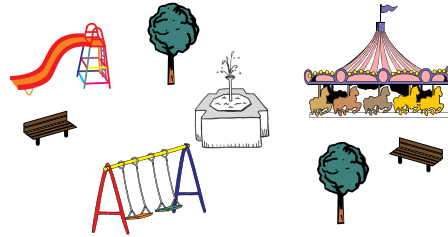
A. What is the area of the park? Sketch a rectangle and use the break-apart method to find the area. Write number sentences on each part to show the number of square feet in each part.

B. Show another way to break the rectangle apart to find the area.

C. What is the perimeter of the park?

D. After the water fountain, slide, swing, and mini-carousel areas are built, what is the remaining area for the bench and ball-play areas?

E. The skate park in TIMS Town is twice as large as the new park. If the water fountain, slide, swing, and mini-carousel areas were built in the area of the skate park, what would be the remaining area?



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Midterm Test

Part 1

For Part 1, do not use a calculator. You may refer to the *Writing Numbers in Word* page in the Reference section of your Student Guide.

1. A. The number of people who can attend a football game in the Rose Bowl is 92,542. Write this number in words.

- B. What does the 9 represent in 92,542? _____

2. A. A soccer stadium in Barcelona, Spain seats 98,787 people. A soccer stadium in Mexico City, Mexico seats 105,000 people. Which stadium seats more people, the one in Spain or the one in Mexico?

- B. Estimate the difference in the number of seats in the two stadiums. Show or tell how you made your estimate.

3. A. Show how a base-ten hopper can move from 126 to 398. Write a number sentence to match.

- B. Show how a base-ten hopper can move from 1000 back to 874. Write a number sentence to match.



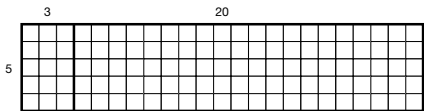
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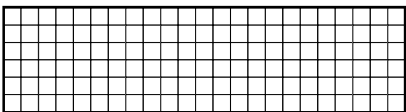
4. A. Grace drew the rectangle below and broke it into parts to help her find 5×23 using the break-apart method.
 - Write number sentences on each part to show the number of squares in each.

- Write a number sentence to show how to put the two parts together to get the total number of squares in the large rectangle.



Number Sentence: _____

- B. Show another way to break the rectangle apart to solve 5×23 so that it is easy to multiply.
 - Write number sentences on each part to show the number of squares in each.



Number Sentence: _____

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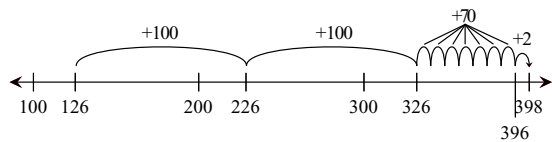
Midterm Test Part

1 (TG pp. 1–3)

Questions 1–10

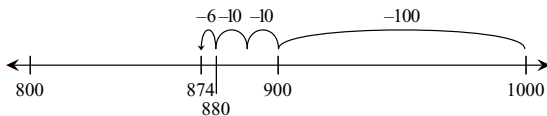
1. A. Ninety-two thousand, five hundred forty-two
- B. 90,000

2. A. The stadium in Mexico seats more people.
- B. Possible response:
5,000; 98,787 is close to 1000,000.
 $105,000 - 100,000 = 5,000$



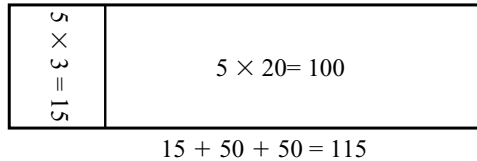
$126 + 200 + 70 + 2 = 398$

- B. Possible response:

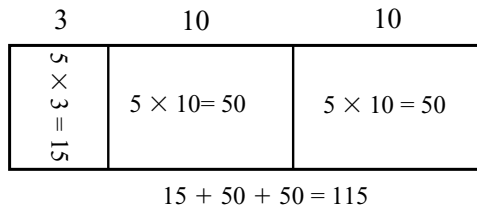


$1000 - 100 - 20 - 6 = 874$

4. A.



- B. Possible response:



For Questions 5–9, one possible mental math strategy is given for each.

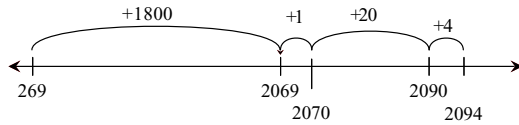
5. 2093 ; $1800 + 200 = 2000$, $2000 + 77 = 2077$
and $2077 + 10 = 2087$ and $2087 + 6 = 2093$

6. 103 ; $2897 + 3 = 2900$

$2900 + 100 = 3000$

$3 + 100 = 103$

7.



8. 215 ; $40 \times 5 = 200$

$3 \times 5 = 15$

$200 + 15 = 215$

9. 196 ; $30 \times 7 = 210$

$2 \times 7 = 14$

$210 - 14 = 196$

10. Possible response: $1800 + 300 = 2100$, which is close to 2093 .

Part 2 (TG pp. 4–8)

Questions 11–22

11. 441 pencils; $34 + 29 = 63$, $63 \times 7 = 441$

12. A. 170

B. 4

13. 9 tiles; Possible strategy: $4 \times n = 36$, $n = 9$; or $36 \div 4 = 9$ tiles.

14. A. Yes, $4 \times 6 = 24$ or I can make a rectangle of four rows of six.


B. No; Possible response: $4 \times 6 = 24$, and $4 \times 7 = 28$, so you can't multiply 4 by any whole number to get 27. The only factors of 27 are 1, 3, 9, and 27. Or I can not arrange 27 tiles into 4 rows evenly.

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- Solve Questions 5–10 using paper and pencil or mental math. Estimate to be sure your answers are reasonable.
- Show how to solve two problems using mental math.
- You may use the *Addition, Subtraction, and Multiplication Strategies Menu* pages in the Reference section in your *Student Guide*.

5. 1816
 $+ 277$

Which two problems will you choose to solve with mental math? 

6. $3000 - 2897 =$

7. 2094
 $- 269$

8. $43 \times 5 =$

9. 28
 $\times 7$

10. Show how you know your answer to Question 5 is reasonable.

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Part 2

For Questions 11–22, you may use any of the tools you have used in class. For example, you may use a ruler, calculator, or square-inch tiles.

11. Jerome collected 34 red pencils and 29 blue pencils to donate to a school. Jerome and six of his friends each collected the same amount. How many pencils were donated? Show or tell how you solved the problem.

12. Replace n with a number to make each number sentence true.
A. $900 + 70 + 4 = 800 + n + 4$ B. $1000 = 654 + 300 + 50 - n$

13. Tom made a rectangle with 36 tiles. If there are 4 rows, how many tiles are in each row? Show how you found your answer.

14. A. Is 4 a factor of 24? Show or tell how you know.
B. Is 4 a factor of 27? Show or tell how you know.

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Date _____

Name _____

15. Guess my number: I am a multiple of 3 and 5. I am between 10 and 40. I am an odd number. What number am I?
Show or tell how you solved the riddle. Use Math Practices Expectation 5.

<p>M.P.5: Show my work. Show my answer so someone else can understand my thinking.</p>	Yes...	No, but ...	No...
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15. 15; Possible response: First I listed all the multiples of 3 between 10 and 40. Those are 12, 15, 18, 21, 24, 27, 30, 33, 36, 39. From those I found all the numbers that were also multiples of 5. Those are 15 and 30. Of those two, only 15 is an odd number.

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Name _____ Date _____

16. A. Is 27 a prime number? Show or tell how you know.

B. Is 29 is a prime number? Show or tell how you know.

17. A. In the last five weeks, Frank read the following number of books each week: 5, 2, 6, 4, 3. Find the median number of books he read for the five weeks.

B. Find the mean number of books Frank read for the five weeks.

18. A. In the last six weeks, Lee Yah read the following number of books each week: 1, 7, 7, 1, 1, 3. Find the median number of books she read for the six weeks.

B. Find the mean number of books Lee Yah read for the six weeks.

19. Use the medians and means from Questions 17 and 18. Predict who will read more books next week, Lee Yah or Frank. Explain your thinking.

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16. A. No; $3 \times 9 = 27$
B. Yes; the only factors of 29 are 1 and 29.

17. A. 4 books
B. 4 books

18. A. 2 books
B. 3 books, to the nearest whole book.

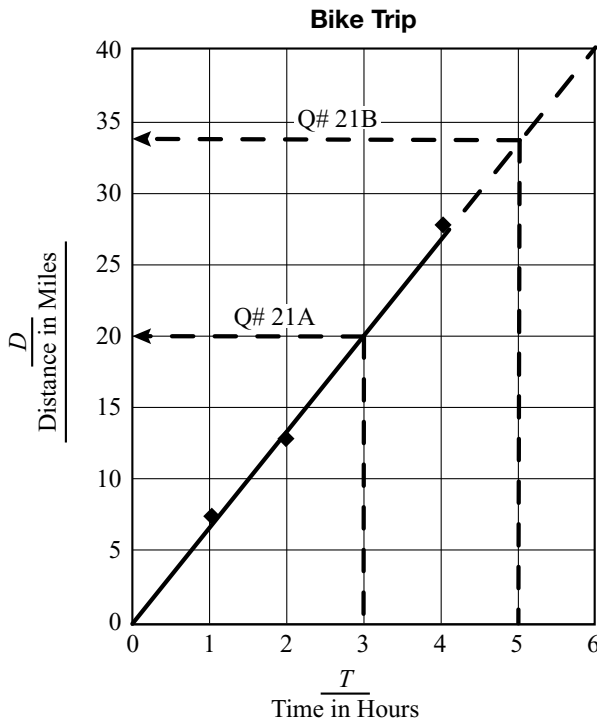
19. Possible response: Frank because both his median and mean were higher than Lee Yah's; Frank read 20 books in 5 weeks while Lee Yah read 20 books in 6 weeks.

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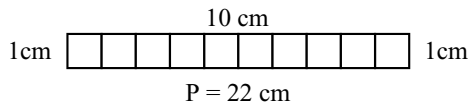
20. A.

T Time in Hours	D Distance in Miles	Ordered Pairs (T, D)
1	7	(1, 7)
2	12	(2, 12)
4	26	(4, 26)

B–C.



21. A. Around 20 miles; Accept predictions between 17 and 23 miles. See graph.
 B. Around 33 miles; Accept predictions between 30 and 35 miles. See graph.
22. A. 10 square centimeters
 B. 16 centimeters
 C. Responses will vary. The maximum perimeter is 22 cm.



Name _____ Date _____

20. A. Michael went for a day-long bike ride. He recorded the data in the table for the number of miles he rode. Fill in the table with the ordered pairs.

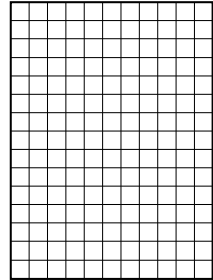
Bike Trip		
T Time in Hours	D Distance in Miles	Ordered Pairs (T, D)
1	7	(1, 7)
2	12	
4	26	

B. Make a point graph of the data. Choose a scale that will leave room to make predictions.
 C. If the points lie close to a straight line, use a ruler to draw a best-fit line.

21. Use the data table or graph in Question 20 to make the predictions below. Show your work on the graph or explain your thinking.

A. Predict the number of miles Michael rode in three hours.

B. Predict the number of miles he rode in five hours.



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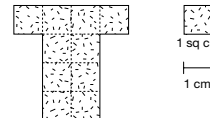
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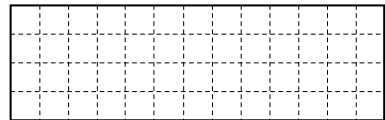
Name _____ Date _____

22. A. What is the area of the shape below? _____



B. What is the perimeter?

C. Draw another shape with the same area as the shape above, but with a greater perimeter.



What is the perimeter? _____

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