

Key

Read all directions and follow them carefully. Show all work for full credit. Relax, breathe, and good luck. ☺

1. (4 points) Determine if the quantities are related to one another. If so explain whether the value of the second quantity increases or decreases as the first quantity increases. If they are not related give a counter example or explanation.

a. The number of minutes spent swimming and the number of calories you burn.

yes - increasing calories burned as minutes swimming increases

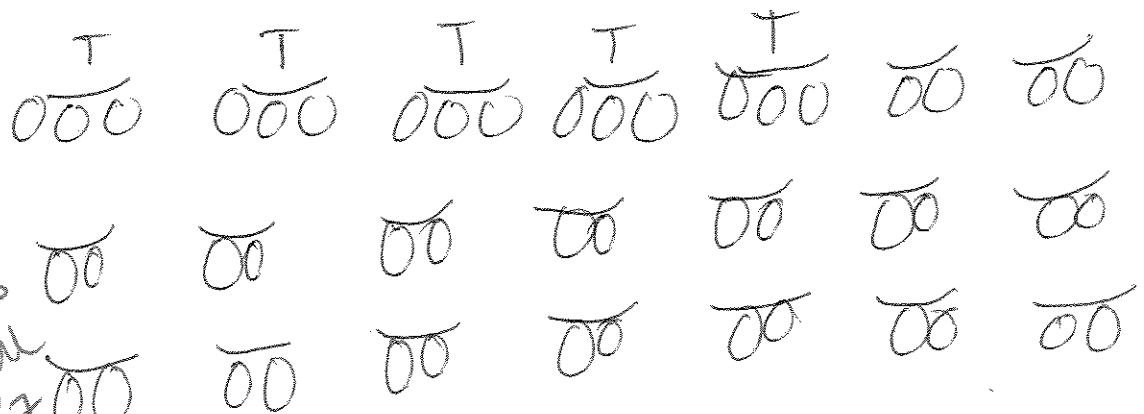
b. The height and weight of students in your first grade classroom.

No - taller students could weigh less than shorter students

2. (6 points) The sports shop in my town sells bicycles and tricycles and often has a selection of them out for customers to try. While I was looking around, my son counted 47 wheels and 21 seats. How many bicycles and tricycles were there? Use a **non-algebraic** method to solve this problem.

★ make 21 seats

add wheels until you get 47



Answer: 16 bicycles & 5 tricycles.

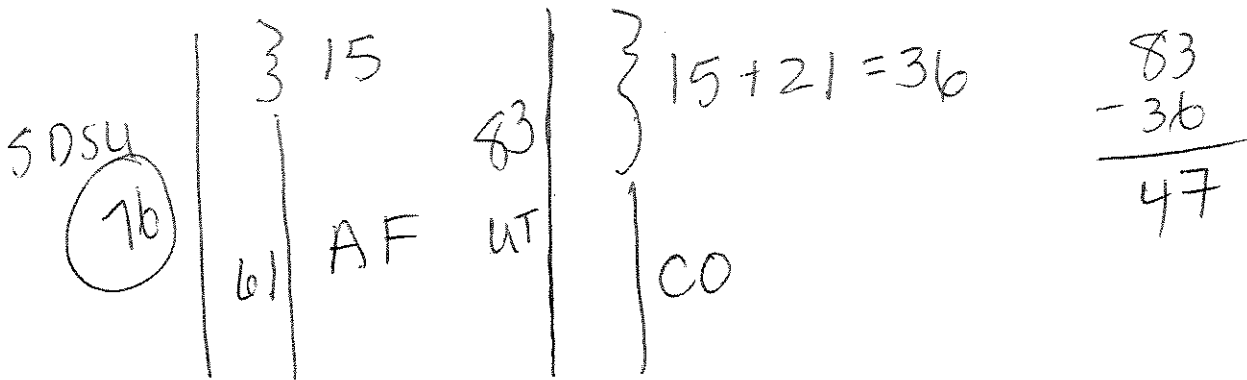
3. (11 points) On Saturday night, SDSU basketball played Air Force and won by 15 points. Air Force scored 61 points. That same night, Utah scored 83 points against their losing opponent, Colorado. Utah won by 21 more points than SDSU won by. How many points did Colorado score?

a. List at least 6 quantities and their values: if given

Quantity	Value
points scored by SDSU	?
points scored by AF	61
difference in points	15
points scored by Utah	83
points scored by Colorado	?
differences in points	21

b. Use a non-algebraic method to solve. Show all work

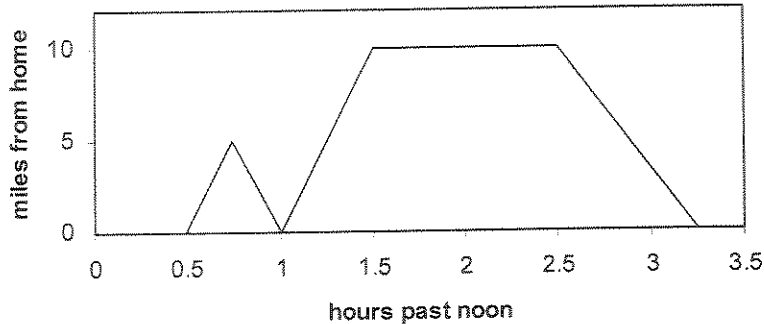
Colorado scored 47 points.



4. (4 points) Mark and label the points to show Alvin, Kim and Chuck on the following graph based on the information given. Chuck is heavier than Alvin, but lighter than Kim. Alvin is taller than Chuck and Kim. Chuck is shorter than Kim.



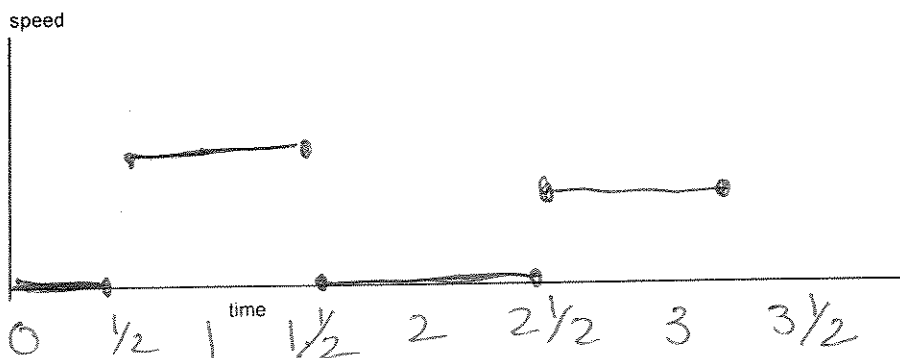
5. (8 points) Wiley Coyote is trying to catch the roadrunner. He is planning on setting up a trap for him at the cliff. His distance (in miles) from home is graphed as a function of the time past noon (0 represents noon). Use the graph to answer the following questions.



- a. What time did he leave home? 12:30
- b. At what time did he realize he forgot roadrunner trap? 12:45
- c. What did he do about the forgotten trap? go home
- d. How long is the walk to the cliff? ~~10 miles~~ 1/2 hour
in time
- e. How long did he wait for the roadrunner at the cliff? 1 hour
- f. How far away is the cliff? 10 miles
- g. Did the coyote walk slower going to or coming from the cliff?
Explain how you know.

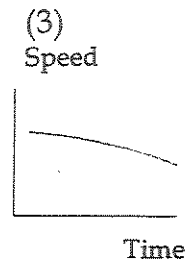
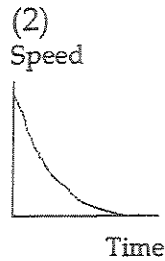
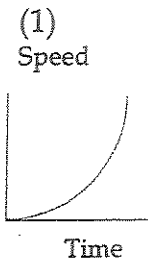
Faster to cliff in 1/2 hour
longer here 45 min

6. (3 points) Sketch a speed graph that matches the position graph above.

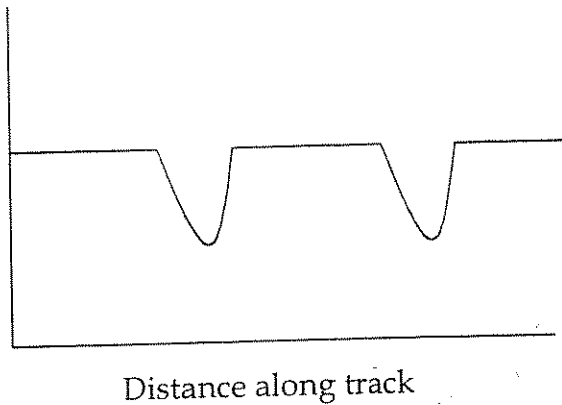


7. (6 points) Match each speed/time graph with its description.

- a. Speed of a pitched baseball: 3 (2nd) starts fast, slows down
- b. Speed of a falling object: 1 starts stop then speeds up

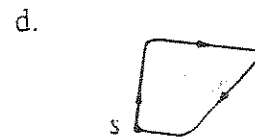
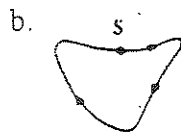


8. (4 points) Consider the speed/time graph of a race car shown below:
Speed



2 equal turns

Which of the following tracks would produce this graph? Assume that the car is already in motion when the graphs begin.



9. (12 points) Look for a pattern and fill in the next three blanks for each sequence below.

a. 3, 8, 13, 18, 23, 28, 33

b. -8, -5, -2, 1, 4, 7, 10

c. 1, 3, 4, 7, 11, 18, 29

d. 1, 4, 9, 16, 25, 36, 49

10. (9 points) Find the rules from the following tables.

x	y
0	5
1	6
2	7
10	15

x	y
4	-18
2	-6
0	-2
3	-11
1	-3

x	y
2	6
3	4
7	-4
0	10
4	2

0	10
2	6
3	4
4	2
7	-4

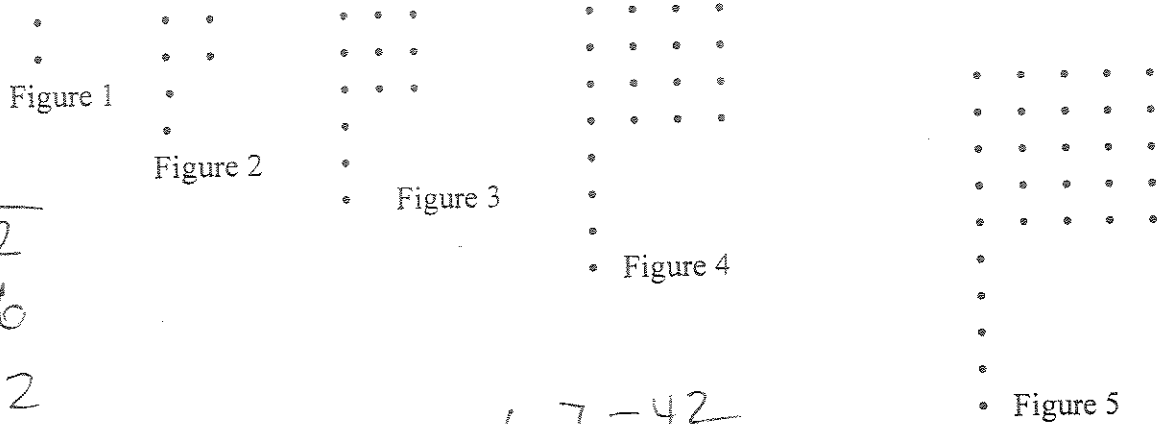
0	-2		
1	-3	-1	
2	-6	-3	-2
3	-11	-5	-2
4	-18	-7	-2

rule: $y = x + 5$

rule: $y = -x^2 - 2$

rule: $y = -2x + 10$

11. (8 points) Look for a pattern to write an expression for the number of •s in each figure. Make a table if it is helpful. Use the pattern to answer the questions below.



1	2
2	6
3	12
4	20

- a. Figure 6 would consist of $6 \cdot 7 = 42$ dots.
 b. Figure 8 would consist of $8 \cdot 9 = 72$ dots.
 c. Figure 50 would consist of $50 \cdot 51 = 2550$ dots.
 d. Figure "n" would consist of $n(n+1)$ dots.

12. (extra credit 4 points) Examine the following phrase used to call this character in movie and cartoon series.

BEETLEJUICE.

11 letters

If this pattern is repeated over and over, what letter will be in the 268th position?

I

$$\begin{array}{r}
 24 \\
 \hline
 11 \overline{) 268} \\
 \underline{22} \\
 48 \\
 \underline{44} \\
 4 \text{ left over}
 \end{array}$$