George Washington Carver
High School of Engineering and Science
2021 Summer Enrichment

Due date: 8/31/21

DIRECTIONS/INFORMATION:

• The Summer Enrichment must be completed in its entirety over the summer.

• This assignment will count as a test grade for the first marking period. Late submissions will reduce the grade earned.

• This packet contains math skills required for Algebra 1.

• The packet is divided into eight, one-week sections that will allow you to develop a schedule for completing the packet. Follow the directions given in each section of the packet carefully.

Thank you in advance for completing this packet by 8/31/21.

Supplies for this course:
-1" binder (3-ring)
-Loose-leaf Paper
-Pencils
-Calculator: **TI-84 Plus** (expensive but highly recommended) or **TI-30XIIS**
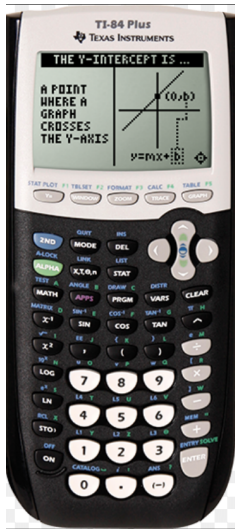
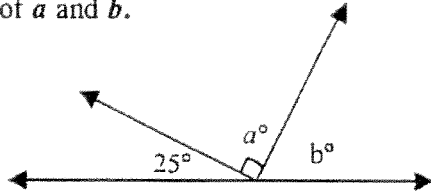| 1. Use the frequency distribution to find the average number of movies watched by students during one week. Round your answer to the nearest hundredth.	2. Michelle wants to listen to 5 compact discs. Two compact discs are each 51 minutes long and the other three compact discs are each 46 minutes long. How many hours and minutes will it take Michelle to listen to all 5 compact discs?

Moves Watched in a Week	Tally	Frequency
6	I	1
5		0
4	III	3
3	THU III	8
2	THU I	6
1	II	2
0	III	3

---

3. Find the values of *a* and *b*.

m∠a = _____

m∠b = _____

$a°$ $25°$ $b°$

4. Fill in the missing numbers.

$$\frac{4}{7} = \frac{16}{} = \frac{}{35} = \frac{}{21} = \frac{140}{} = \frac{}{140}$$

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5. Marcela was assigned some math problems for homework. She answered half of them in study hall. After school she completed seven more. If she still has 11 problems to do, how many problems were assigned?

6. Using the pattern in the chart below, how much interest can someone earn on a $200 deposit in a savings account?
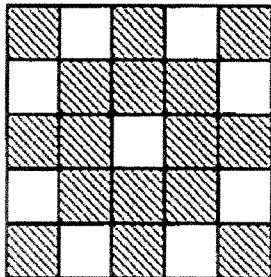
Deposit	$20.00	$40.00	$60.00	$80.00	$100.00	$120.00
Interest	$1.50	$3.00	$4.50	$6.00	$7.50	$9.00

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7. What makes the set of integers different from the set of whole numbers?
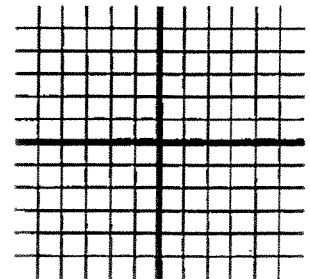
8. Evaluate:

$$1^{20} + 10^3 =$$

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9. If a fly lands on one of the tiles of this floor, what is the probability that it will land on a shaded tile?

10. Complete the table and graph equation.

$$2x + 3y = 12$$

x	y
-3	
0	
	0
3	

1. Fill in the blanks of the proportion to find 53% of 215. Then solve your proportion.

$$\frac{\rule{1cm}{0.4pt}}{\rule{1cm}{0.4pt}} = \frac{\rule{1cm}{0.4pt}}{\rule{1cm}{0.4pt}}$$

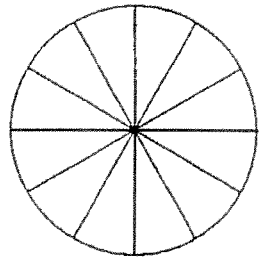2. Order the given set of numbers from least to greatest:

$$8, \sqrt{41}, 9, \sqrt{56}, \sqrt{65}, 6$$

3. Find the volume of the given rectangular prism.

30 in.
25 in.
45 in.
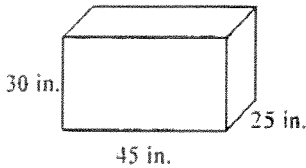
4. The side lengths of a particular triangle are 12, 16, and 20. Is it a right triangle? Justify your response by using the converse of the Pythagorean Theorem.

5. Each of the 12 central angles in the circle is n degrees. Find n.

6. Use the following information to create a bar graph.

Several cases of weather-related crop damage were reported in Virginia over the last 10 years. 205 cases were due to excessive heat, 151 were the result of floods, 94 were attributed to lightning, 87 were because of tornadoes, and 31 were due to hurricanes.

7. Find the value of ▽ in the following equation.

$$\triangledown \cdot \triangledown \cdot \triangledown \cdot \triangledown = 256$$

8. When Corey added $4821 + 5416 + 4633 + 5221$ on his calculator, he obtained the sum 15,386. Without using a calculator, estimate the sum to see whether his solution is reasonable.
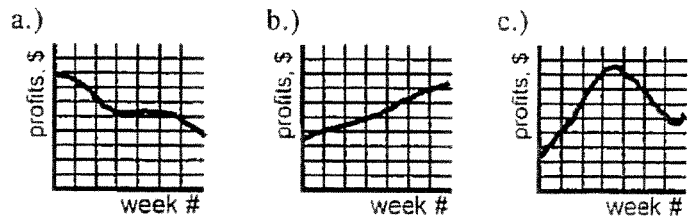
9. Tell whether each given statement is true "always," "sometimes," or "never."

a. a rational number is an integer

b. an irrational number is a real number

c. a rational number is an irrational number

10. Which graph below shows a consistent growth in profits made from video rentals over 6 weeks?

a.)
profits, $
week #

b.)
profits, $
week #

c.)
profits, $
week #

Explain your choice.

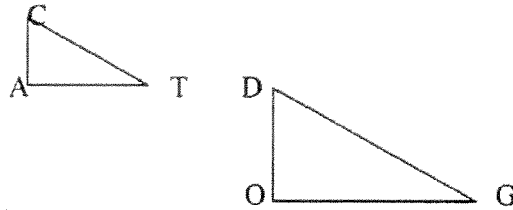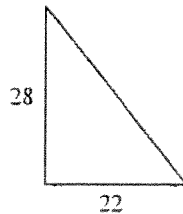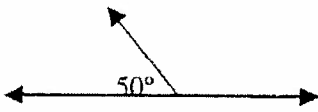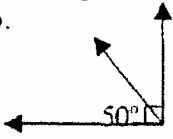|	
1. Solve the equation for K: $K + \dfrac{2}{3} = \dfrac{8}{9}$	2. Evaluate $5a + 6b - c$ if $a = 5$, $b = 6$, and $c = 4$.
3. Add the matrices. $\begin{bmatrix} 2.1 & 4.1 \\ 6.0 & 1.3 \end{bmatrix} + \begin{bmatrix} 3.2 & 2.1 \\ 4.4 & 6.2 \end{bmatrix}$	4. Triangle CAT is **similar** to triangle DOG. If CA = 4, AT = 6, and DO = 6, write and solve a proportion to find OG.
5. Use the area formula for a triangle to compute the area of the triangle shown: $A = \dfrac{1}{2}bh$ 28, 22	6. Find the mean, median, and mode of the set of numbers: 6, 7, 11, 5, 8, 7, 4, 13, 11, 2.
7. Name the set or sets of numbers to which each of the following real numbers belong (natural, whole, integer, rational, irrational). a.) 12 b.) $\dfrac{3}{8}$ c.) $\sqrt{11}$	8. If $n = 7$, evaluate: $1 + n^2$
9. What percent of the boxes have x's in them?	10. To print T-shirts you need to pay once for the screen to be made and then a small fee for each shirt printed. If you have $300, how many t-shirts could you have printed? Show how you know. WE PRINT screen...$75 $2.50/shirt

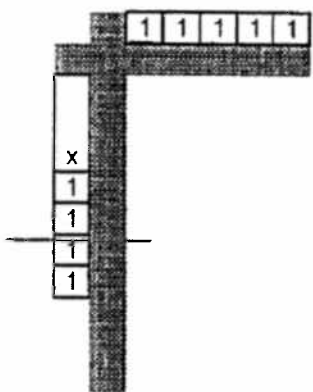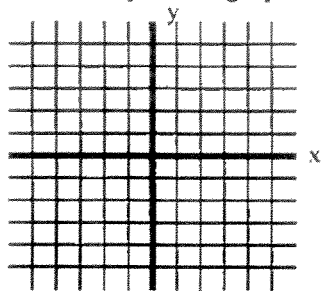|	
1. What is the ratio of 5 feet to 5 yards?(It is <u>not</u> 1:1.)	2. The width of a newspaper is 13¾ inches. The left margin is $\frac{7}{16}$ inch and the right margin is ½ inch. What is the width of the written page inside the margins?
3. If the measure of an angle is 50°, circle the diagram that could be used to find its **complement**. a. b. 50° 50° The complement of a 50° angle is _____ .	4. 24 oz. of soda cost $1.29. At that rate, how much would you expect 30 oz. of soda to cost?
5. Shana earned the following scores on quizzes throughout the quarter: $\frac{34}{40}$, $\frac{20}{25}$, $\frac{53}{60}$. Indicate which one of the three was her best score, by converting them to percents.	6. Look for a pattern and complete the table using the pattern. $\begin{array}{c\|c} M & N \\ \hline 1 & 3 \\ 2 & 6 \\ 3 & 9 \\ 4 & \underline{} \\ \vdots & \vdots \\ 10 & \underline{} \\ \vdots & \vdots \\ 100 & \underline{} \end{array}$ Describe what you have to do to the value of M to get its corresponding N value.
7. Draw a rectangle to show the product of 5 and $(x+4)$. Then write the product. $5(x+4) =$	8. The chart below shows how Dale has budgeted his money based on a weekly salary from his job after school. **Dale's Weekly Budget** | Purpose	% of total	Amount
---	---	---
Food	25	$22.50
Savings	20	?
Entertainment	15	$13.50
Clothes	40	?	 a.) How much does Dale earn each week? _____ b.) How much of his weekly salary does Dale budget for clothing?
9. Evaluate each expression. a.) $(3 \times 5)^2$ b.) 3×5^2	10. Compare with < or >. $\sqrt{73}$ _____ $\dfrac{61}{8}$

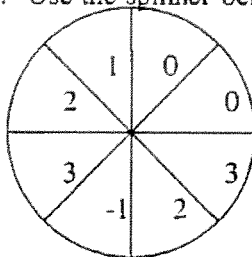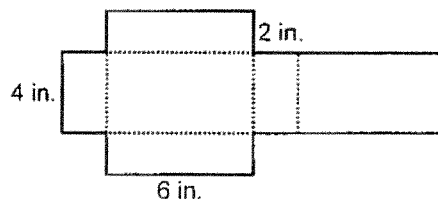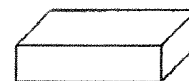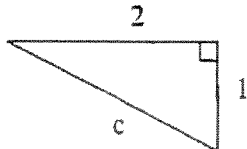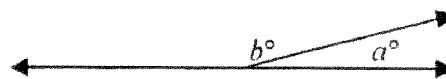|	
1. Make a table of five ordered pairs that solve the given equation. Use these ordered pairs to graph. $y = 2x - 3$ x | y	2. Indicate whether each statement is true or false: a. The difference of two whole numbers must be a whole number. _____ b. The difference of two integers must be an integer. _____ c. The quotient of two integers must be an integer. _____
3. The population of North America is 278,000,000 people, and its area is 7,466,890 square miles. Which is a reasonable estimate for the population density (the number of people per square mile) of the continent: 370 people per square mile or 37 people per square mile? Explain.	4. Use the spinner below to find the probabilities listed. a) P(2) = b) P(1) = c) P(a negative number) = d) P(4) =
5. The formula for converting a temperature on the Fahrenheit (F) scale to a temperature on the Celsius (C) scale is: $C = \dfrac{5}{9}(F - 32)$. Find the Celsius temperature when the Fahrenheit temperature is 86 degrees.	6. A box was cut and folded to make the figure below. Find: a.) its volume. 4 in. 2 in. 6 in. b.) its surface area.
7. A triangle with vertices X(-1, 2), Y(2, 3), Z(3, -1) is translated by 2 units horizontally and –3 units vertically. Write the coordinates of the new triangle, X′ Y′ Z′.	8. If you could fold a piece of paper in half 10 times, how many pieces of paper thick would it be? | # of folds	0	1	2	3	4	...	10
---	---	---	---	---	---	---	---
# of sheets thick	1	2	4	8	16	...	____	
9. Find the value of c. Indicate whether c is a rational or irrational number. 2 1 c	10. If a = 25, find the value of b. $b°$ $a°$ a and b are called _____ angles.

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1. If y = 36, x = 25, w = 20, evaluate the expression:
 	
$$\frac{5w}{x} - (y+w)$$
	2. Create a 3 x 3 matrix that meets the following conditions:
	
	    The only entries are 1, 2, and 3.
	    Every column contains 1, 2, and 3.
	    Every row contains 1, 2, and 3.

3. Use the graph to answer the following questions.

Weekly Hours Worked
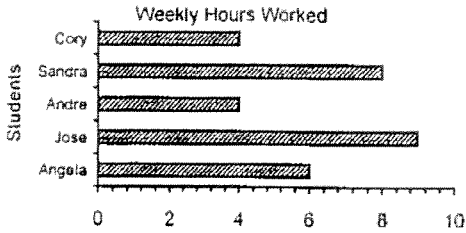
a. What is the mean number of hours worked by these students each week? _____
b. What is the median number of hours? _____
c. What is the mode of this data? _____
d. What is the range of hours worked weekly?

4. Identify the x-intercept and the y-intercept on the graph.

Complete the table

x	y
-2	
-1	
0	
1	
2	

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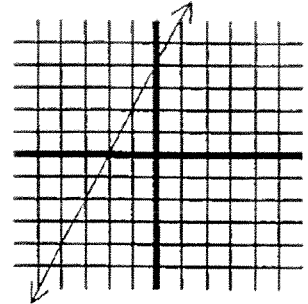
5. A mosquito lands on one of the squares in the diagram shown. What is the probability that it lands on a square containing:

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

a) an even number? _____

b) a multiple of 3? _____

c) a multiple of 5? _____

d) a multiple of both 3 and 5? _____

6. At a certain time of day, a flagpole casts a shadow 8.75 feet long. At the same time of day, a 6-foot-tall person casts a shadow that is 1.75 feet long. How tall is the flagpole? Draw a diagram of the two objects and their shadows. Write a proportion to solve for the height of the flagpole.

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7. Define the function for this table.

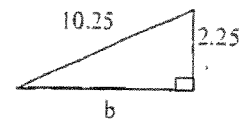| x	f(x)
1	-5
2	-4
3	-3

f(x) = _____

8. What percent of the figure below is shaded?

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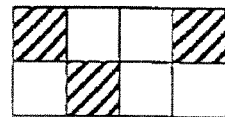
9. Solve for x: $\dfrac{5.6}{x} = \dfrac{8.96}{3.2}$

10. Find the value of b and indicate whether it is a rational or irrational number.

1. Evaluate: $5 - 3^2 + 18 \div 2$

2. Bill works at a local restaurant, earning $300 per week. Today he was told that he will be given a raise of 10% starting next week. What will his new weekly salary be?

3. The Maple Car Rental Company charges a flat fee of $45, plus $1.00 per mile to rent a car. Use this information to calculate the cost in the table.
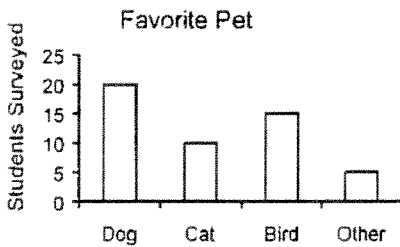
miles traveled	cost
25	
50	
75	
100	

4. Fill in the blanks below.
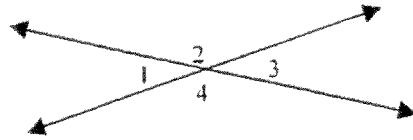
a) $\angle 1$ and $\angle$ ___ are a pair of vertical angles.
b) $\angle 1$ and $\angle$ ___ are a pair of supplementary angles.

5.

Favorite Pet

a) How many students claim a cat as the favorite pet?
b) How many students were surveyed?
c) What percent of those surveyed chose a bird as their favorite pet?

6. Graph trapezoid BIRD with vertices B(1, 1), I(2,4), R(6, 4), D(7, 1). Draw its reflection across the x axis. Label its new coordinates.
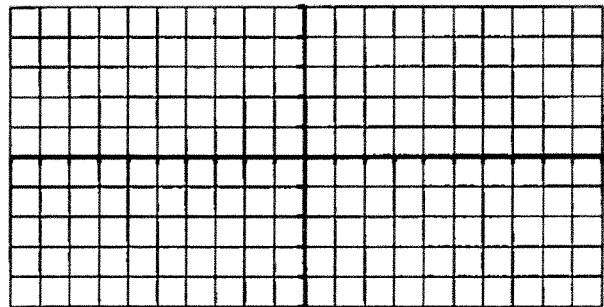
7. Solve the equation. Show each step and check the solution: $\dfrac{x}{5} - 6 = -2$

8. Solve the equation. Show each step and check your solution: $7n - 11 = 73$

9. Order the numbers from least to greatest:

$\sqrt{91}, 9, \dfrac{79}{9}, 9.0002$

10. Evaluate: $6^2 + (4 \cdot 3)^2 - 4^3$

1. Evaluate:

a) $3\frac{1}{2} + 4\frac{2}{3}$

b) $3\frac{1}{2} \div 4\frac{2}{3}$

2. Check all that apply:

	Real Number	Rational Number	Integer	Whole Number	Natural (Counting)
−6					
$2.\overline{3}$					
12					
19					
$\sqrt{2}$					
0					

3. Evaluate $2x + 3y^2$ if $x = -4$ and $y = 5$.

4. Cindy multiplied her age by 5, subtracted 12, and then divided by 3. The result was 16. How old is Cindy?

5. Complete the table and graph the linear function.

$y = 2x - 1$

x	y
-2	
-1	
0	
1	
2	
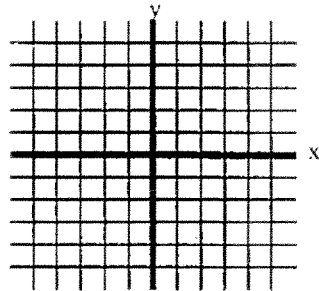
6. A jar contains 15 colored balls. 3 of the balls are red, 4 are white, 5 are blue, and 3 are orange. If you reach into the jar randomly and remove one ball, what is the probability that its color will be: (Round to the nearest percent.)

a) white? _____   b) either orange or red? _____

c) green? _____   d) anything but blue? _____

7. Name the property illustrated by each equation:

a) $3(1000 - 1) = 3000 - 3$ _____

b) $(4 \cdot 3) \cdot 7 = 4 \cdot (3 \cdot 7)$ _____

c) $8 + 20 = 20 + 8$ _____

d) $x + 0 = x$

8. If it takes 8 hours to drive 435 miles, how many hours would you expect it would take to drive 650 miles if you travel at the same rate? (Round to hundredths.)

9. You are on the 8th grade dance committee and in charge of purchasing the refreshments. Chips cost 79¢ a bag and sodas cost 99¢ a bottle. If you are asked to buy 12 bags of chips and 25 sodas, and you are given $35, calculate whether or not that will be enough money. (Do not include sales tax.)

10. Find A + B.

$$A = \begin{bmatrix} 2 & 3 \\ 4 & 5 \end{bmatrix} \qquad B = \begin{bmatrix} 3 & 2 \\ 5 & 4 \end{bmatrix}$$

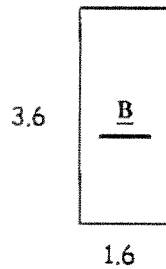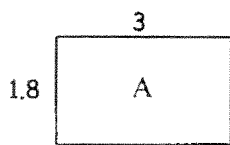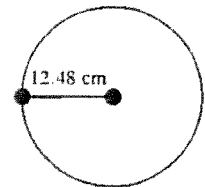|	
1. Rewrite the expression using an exponent. a.) $2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 =$ _____ b.) $w \cdot w \cdot w \cdot w =$ _____ c.) $n^2 \cdot n^3 =$ _____	2. Nike stock began the day on Monday at a price of $132\frac{7}{8}$, and increased $2\frac{3}{8}$ during the day. What is the new price for the stock?
3. In 1990, Americans recycled a record 63.6% of the aluminum cans produced. If 55 billion cans were recycled, about how many were produced? Use a proportion to solve.	4. Use the Pythagorean Theorem to find the value of x. Then indicate whether x is rational or irrational. 12 5 x
5. Subtract the matrices. $\begin{bmatrix} 10.2 & 4.3 \\ 6.1 & 7.9 \\ 8.4 & 11.2 \end{bmatrix} - \begin{bmatrix} 6.4 & 2.3 \\ 5.3 & 1.1 \\ 7.8 & 4.9 \end{bmatrix} =$	6. Find the product: $(4.5)(-3)(1000)(5.17)(0)(-7)$
7. Which rectangle has the greater area? By how many units? 3 1.8 A 3.6 $\underline{B}$ 1.6	8. For the given circle: a) find the area using $A = \pi r^2$. (Use $\pi \approx 3.14$ and round to tenths.) 12.48 cm b) find the circumference using $C = \pi d$.
9. Use the data in the stem-and-leaf plot to find the: 0 $8\mid4 = 84$ 1 5 2 2 3 3 4 3 5 5 1 7 8 6 2 3 5 8 8 8 8 8 9 7 0 0 4 7 9 8 2 4 4 8 9 3 4 5 8 8 a) mean. _____ b) median. _____ c) mode. _____	10. Solve: $-3x + 7 < -29$
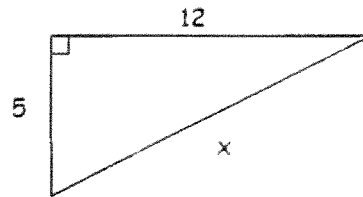
1. 64 people play in a singles tennis tournament. In the first round the players pair off to play each other. The winner of the pair advances to the next round. The loser is eliminated. Complete the chart to see how many rounds it will take to declare the one final champion of the tournament.
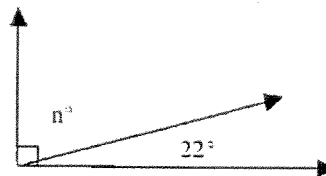
round #	1	2					
number of players	64	32					
number of winners	32						

2. Draw a reflection of the figure across the dotted line.
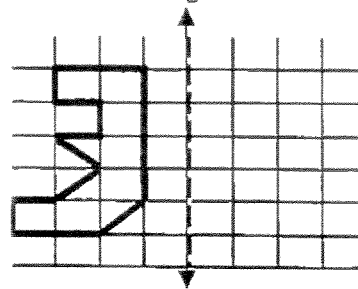
3. Find the volume of a rectangular prism that is 5 cm long, 3 cm wide, and 2 cm tall.
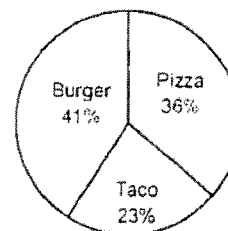
4. Find the value of n.

$n =$ _____

These angles are called _____ angles.

5. Evaluate the expression below. Then create another problem using at least four numbers that result in the same answer.

$$[9 - (8 - 6)^2] - 1$$

6. The circle graph shows the results of a middle school survey. Find the number of students who preferred each category if 300 students responded.

7. What pattern(s) do you notice in the table showing the average family size in the United States?

Year	1975	1980	1985	1990	1995	2000
Family Size	3.6	3.5	3.4	3.3	3.2	3.1

If the average family size keeps changing at the same rate, what would the family size be in the year 2010?

8. Between which two consecutive whole numbers does $\sqrt{42}$ lie?

9. Graph the information from the table on the coordinate system:

Time (seconds)	Speed (miles per hour)
0	0
5	20
10	45
15	55
20	60
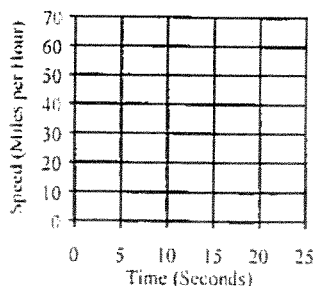
10. Complete each pattern:

a) -3, -11, -19, -27, _____, _____, _____

b) 4, -8, 12, -16, _____, _____, _____

c) 3, 9, 27, 81, _____, _____, _____

d) 1, 3, 7, 15, 31, _____, _____, _____