

# PAULO FREIRE CHARTER SCHOOL

## Math Summer Assessment

### **Review of Math Skills for Entering Freshmen**

**DUE THE FIRST DAY OF SUMMER BRIDGE**

The work in this packet is designed to help you review topics that are important to your success in your math class.

There are two parts to this assessment:

Part I: Review of math skills that should have been learned in middle school. This will count as your first course grade.

Part II: Review of math skills that would be learned in Algebra I. Your responses in this section will help create a learning path for you upon entering into Mathematics I.

Every student is expected to complete Part I. Every student is expected to do as much of Part II as they can. Answer all questions on a separate sheet of paper. **Show All Work.** This assignment will be collected during the Summer Bridge Program.

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*“No one is born fully-formed: it is through self-experience in the world that we become what we are.”*

— Paulo Freire

# **PAULO FREIRE CHARTER SCHOOL**

## **Math Summer Assessment**

### **PART I**

Review of middle school math skills for students entering as freshmen.

### **DUE THE FIRST DAY OF SUMMER BRIDGE**

The problems in Part II are designed to help you review topics that are important to your success in Paulo Freire School Math. We expect that you come to class knowing this material and ready to continue learning.

Answer all questions on a separate piece of paper. **SHOW ALL WORK.**

1.) Kim received the following scores in the state diving championships:

5.2, 5.6, 4.5, 5.0, and 5.2

What was her average (mean) score?

- a) 5.0
- b) 5.1
- c) 5.2
- d) 5.3

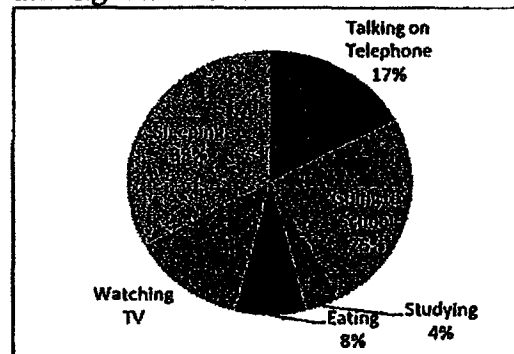
2.) A box of doughnuts contains 4 glazed, 3 cream-filled, and 2 jelly doughnuts. What is the probability of getting a cream-filled doughnut if you choose a random doughnut from the box?

- a)  $1/2$
- b)  $1/3$
- c)  $1/4$
- d)  $1/5$

3.) What is the probability of a sum of 7 if you roll two dice?

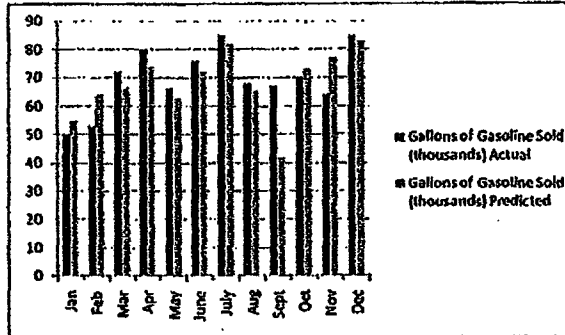
- a)  $1/6$
- b)  $7/36$
- c)  $1/13$
- d)  $1/9$

4.) This circle graph shows how Jimmy spent his time during the last 24 hours. What percent of time did he spend watching television?



- a) 13%
- b) 17%
- c) 20%
- d) 22%

5.) This chart shows the actual and predicted gasoline sales for one year. During which month was there the greatest difference between the predicted and actual gasoline sales?



- a) January
- b) May
- c) September
- d) December

6.) What is the surface area of a rectangular solid whose length is 10 meters, depth is 2 meters, and height is 8 meters?

- a) 160 square meters
- b) 168 square meters
- c) 232 square meters
- d) 300 square meters

7.) A rectangle with a perimeter of 36 inches might have sides measuring:

- a) 12 inches and 5 inches
- b) 9 inches and 4 inches
- c) 10 inches and 8 inches
- d) 2 inches and 18 inches

8.) The nutrition label on a box of candy states that there are 5 servings in the box and that one serving contains 10.5 grams of fat. Tina ate about one-half of the candy in the box. Which is the best estimate of the number of grams of fat she ate?

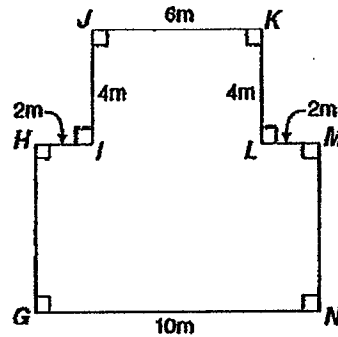
- a) 5.25 grams
- b) 22.5 grams
- c) 26.25 grams
- d) 52.5 grams

9.) Which of the following equations gives the rule for finding the numbers in the column on the right?

x	y
1	6
2	11
3	16

- a)  $y = x - 4$
- b)  $y = 5x + 1$
- c)  $y = 4x + 3$
- d)  $y = 6x - 1$

10.) The perimeter of this figure is 40 meters. What is the length of line segment HG?



- a) 6 meters
- b) 8 meters
- c) 10 meters
- d) 12 meters

11.) For a convex polygon with a small number of sides, like a rectangle or a hexagon, it's easy to draw the figure and count its diagonals. Suppose the convex polygon has many sides. It is possible to find how many diagonals it has without drawing the figure and counting its diagonals. The following formula gives that information:

Number of Diagonals =

$$\frac{n^2 - 3n}{2}$$

where  $n$  = number of sides

Using the formula above, find the number of diagonals for a convex polygon with 115 sides. Which of the following is the number of diagonals for that polygon?

- a) 6440
- b) 3220
- c) 6557
- d) 58

12.) Which of the following is a prime number?

- a) 14
- b) 21
- c) 31
- d) 24

13.) The square root of 65 is between what two numbers?

- a) 5 and 6
- b) 7 and 8
- c) 8 and 9
- d) 10 and 11

14.) What are the next two terms in the sequence below?

1, 5, 13, 29, ?, ?

- a) 35 and 41
- b) 36 and 45
- c) 43 and 55
- d) 61 and 125

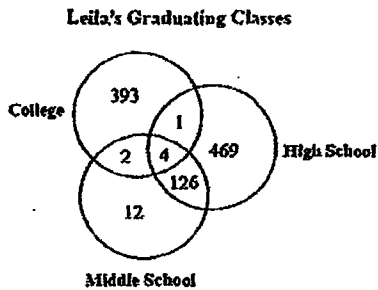
15.) Compute:  $10 + (3)^2 - (-2) \times 3$

- a) 22
- b) 51
- c) 25
- d) 13

16.) Which of the following fractions is equivalent to  $.5 \times 1.5$

- a)  $\frac{1}{4}$
- b)  $\frac{1}{2}$
- c)  $\frac{3}{4}$
- d)  $\frac{1}{3}$

17.) The Venn diagram below describes which students attended the same schools that Leila did.



How many students graduated from both Leila's middle school and college?

- a) 2
- b) 6
- c) 126
- d) 405

18.) Which is equivalent to  $t \div \frac{3}{4}$

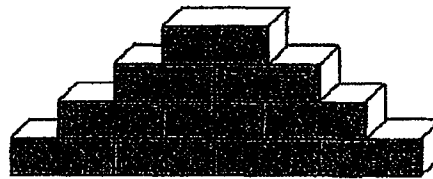
- a)  $.75t$
- b)  $4t - 3t$
- c)  $.075t$
- d)  $\frac{4t}{3}$

19.) Order the following numbers from least to greatest.

$\frac{1}{2}$      $-\pi$      $|-201|$      $\sqrt{16}$

- a)  $-\pi$      $|-201|$      $\frac{1}{2}$      $\sqrt{16}$
- b)  $-\pi$      $\frac{1}{2}$      $|-201|$      $\sqrt{16}$
- c)  $|-201|$      $-\pi$      $\frac{1}{2}$      $\sqrt{16}$
- d)  $-\pi$      $\frac{1}{2}$      $\sqrt{16}$      $|-201|$

20.) Here is a pyramid of 10 bricks. It is 4 blocks high.



How many bricks will you need to make a pyramid that is 20 blocks high?

- a) 190
- b) 210
- c) 400
- d) 420

21.) In the equation below  $x$  represents a positive number

$$y = \frac{100}{x} + 50$$

What happens to the value of  $y$  as  $x$  gets larger?

- a) The value of  $y$  approaches 50
- b) The value of  $y$  decreases to zero
- c) The value of  $y$  stays the same
- d) The value of  $y$  increases

22.) Which of the following describes one way to solve this equation?

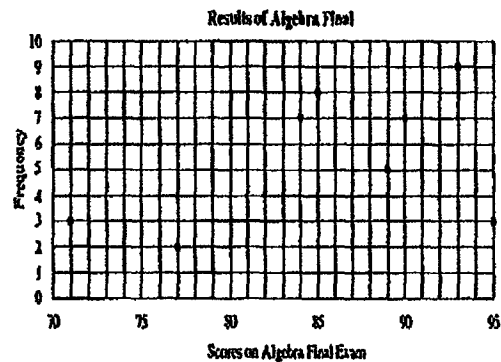
$$12 + 4x = 20$$

- a) Subtract  $4x$  from both sides, then divide by 4
- b) Subtract 12 from 20 then divide the answer by 4
- c) Add 12 to 20 then multiply the answer by 4
- d) Add  $4x$  to both sides, then divide by 4

23.) If  $2x + y = 20$ . What is the value of  $6x + 3y$ ?

- a) 120
- b) 60
- c) 12
- d) 10

24.) The graph shows the frequency of test scores on an algebra exam.



What is the range of the final exam scores?

- a) 7
- b) 9
- c) 20
- d) 24



25.) The ratio of girls to boys in John's class is 4 to 3. If there is a total of 35 students in John's class. How many students are boys?

- a) 8
- b) 12
- c) 15
- d) 20

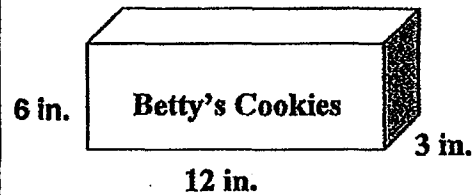
26.) Mary divided 8 by  $\frac{3}{4}$ . Which operation shown below should produce the same result?

- a)  $\frac{8}{1} \times \frac{3}{4}$
- b)  $\frac{8}{1} \times \frac{4}{3}$
- c)  $\frac{1}{8} \times \frac{4}{3}$
- d)  $\frac{1}{8} \times \frac{3}{4}$

27.) Paul rode his bicycle for 3 hours and traveled 45 miles. He still has 36 more miles to travel. If he continues at the same average speed how long will it take him to continue his trip?

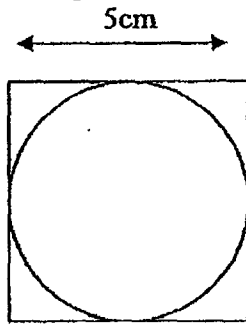
- a) 1.5 hours
- b) 2.4 hours
- c) 3.75 hours
- d) 12 hours

28.) Betty packages her homemade cookies in a box that is 3 inches wide, 12 inches long and 6 inches tall. How many square inches of material is needed to make the box that contains her cookies?



- a)  $84 \text{ in}^2$
- b)  $252 \text{ in}^2$
- c)  $126 \text{ in}^2$
- d)  $216 \text{ in}^2$

29.) The figure below shows a circle inscribed into a square.



Which of the following is the closest to the area of the circle?

- a)  $7.8 \text{ cm}^2$
- b)  $15.7 \text{ cm}^2$
- c)  $19.6 \text{ cm}^2$
- d)  $78.5 \text{ cm}^2$

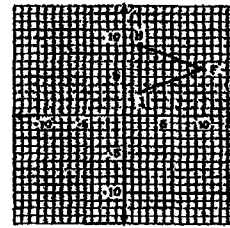
30.) To make Tara's famous chocolate chip cookies you must add 3 cups of chocolate chips to make 36 cookies. Based on this recipe how many cups of chocolate chips is needed to make 225 cookies?

- a) 6.25 cups of chocolate chips
- b) 75 cups of chocolate chips
- c)  $18 \frac{3}{4}$  cups of chocolate chips
- d) 25 cups of chocolate chips

31.) Susan has a bag of 500 marbles. She randomly pulls out 25 marbles. And finds that 6 of the marbles are purple. Of the original 500 marbles, How many can Susan expect to be purple?

- a) 20
- b) 40
- c) 80
- d) 120

32.) Which figure below will result if triangle FHI is reflected across the x-axis?



- a.)
- b.)
- c.)
- d.)

33.) The perimeter of a square is 50 inches.  
How long is one side of the square?

- a) 25 inches
- b)  $12\frac{1}{2}$  inches
- c)  $6\frac{1}{4}$  inches
- d) 7 inches

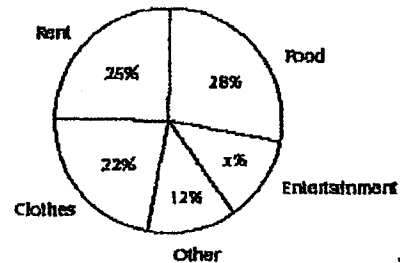
34.) A deck of cards contain 52 cards each divided into 4 suits: hearts, spades, clubs and diamonds. What is the probability of picking an Ace from the deck?

- a)  $\frac{1}{4}$
- b)  $\frac{1}{13}$
- c)  $\frac{1}{26}$
- d)  $\frac{1}{52}$

35.) Diana's wants to buy a pair of designer jeans. The jeans originally cost \$45.99. She waits for the perfect sale and now they have been discounted by 10%. Diana remembers she has an additional coupon for 5% off the discounted price. How much did Diana pay for her jeans after the discounts?

- a) \$39.09
- b) \$35.22
- c) \$39.32
- d) \$32.41

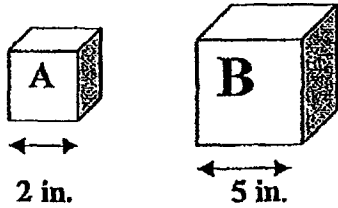
36.) Mrs. White earns \$600 every week.



Using the graph provided, how much money does she spend per week on clothes?

- a) \$72
- b) \$132
- c) \$155.50
- d) \$468

37.) What is the ratio of the volumes of Cube A to Cube B?



- a) 1 : 4
- b) 8 : 125
- c) 1 : 2
- d) 4 : 10

38.) A bicycle wheel travels 47 inches in one full rotation. What is the diameter of the wheel to the nearest inch?

- a) 5 inches
- b) 8 inches
- c) 15 inches
- d) 20 inches

39.) Jenny received an 85, 90, 65, and 70 on her first four exams. What will she have to receive on her fifth exam to have an average score of exactly 78?

- a) 100
- b) 90
- c) 80
- d) 70

40.) There are 4 children in the Grant family. James is  $1\frac{1}{4}$  times as tall as Devin. John is 3 inches taller than James. Grace is 58 inches tall, and she is 2 inches taller than Devin. How tall is John in feet and inches?

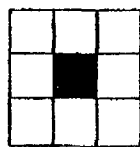
- a) 5 ft 3 in.
- b) 5 ft 10 in.
- c) 6 ft  $\frac{1}{2}$  in.
- d) 6 ft 1 in.

## OPEN-ENDED

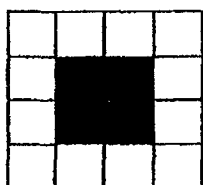
Respond fully to the open-ended questions that follow. Show all your work and clearly explain your answer. You will be graded on the correctness of your method as well as the accuracy of your answers.

41.)

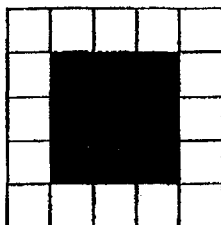
Examine the geometric pattern in the diagram below.



Stage 1



Stage 2



Stage 3

- Draw Stage 4 and Stage 5 of the diagram.
- James wants to determine the number of shaded squares in the 12<sup>th</sup> stage, but does not want to draw all 10 stages and then count the shaded squares. Explain to James how he could find the number of shaded squares in stage 12 without actually drawing it.
- What would be the number of shaded squares in the 12<sup>th</sup> stage?

## OPEN-ENDED

*Respond fully to the open-ended questions that follow. Show your work and clearly explain your answer. You will be graded on the correctness of your method as well as the accuracy of your answers.*

**42.) Juan loves making home improvements. His next project is his backyard. He wants to place a 2ft wide marble walkway around his pool. The rectangular pool measures 15ft wide and 20ft long.**

- **Draw a diagram of Juan's pool and walkway. (Label the dimensions)**
  
  
  
  
  
  
  
  
  
  
- **Find the area of the walkway that surrounds the pool.**
  
  
  
  
  
  
  
  
  
  
- **Juan found a good sale at Marble World. The marble that he wants to place around his pool costs \$25 per square foot. How much will Juan spend on the marble to make the walkway around his pool? (Round to the nearest hundredth.)**

## OPEN-ENDED

*Respond fully to the open-ended questions that follow. Show your work and clearly explain your answer. You will be graded on the correctness of your method as well as the accuracy of your answers.*

**43.) The average salary of 5 employees at Toys 4 All is \$35,000, but the average of these 5 employees and their manager's salary is \$41,000. Based on this information:**

- **How much does the manager earn each year?**
  
- **What is the *total* cost for Toys 4 All to raise the salaries of the 5 employees to \$40,500?**
  
- **Toys 4 All increased the manager's salary to \$80,000. How does this new change affect the mean salary of the 6 people (1 manger and 5 employees)?**

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## Math Summer Assessment

### Review of Math Skills for Entering Freshmen

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The work in this packet is designed to help you review topics that are important to your success in your math class.

There are two parts to this assessment:

Part I: Review of math skills that should have been learned in middle school. This will count as your first course grade.

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— Paulo Freire



# **PAULO FREIRE CHARTER SCHOOL**

## **Math Summer Assessment**

### **PART II**

#### **Review/ Preview of Algebra I Skills**

**DUE THE FIRST DAY OF SUMMER BRIDGE**

The problems in Part II are designed to help you review and/or explore a large part of the topics that will be covered in your Mathematics I course this year. You are expected to give a well-reasoned solution to each problem.

Answer all questions on a separate sheet of paper. Show all work.

**PART II Multiple Choice Name:** \_\_\_\_\_

1.  $-6 + 4(-5) =$

- (a) -26                      (b) 26                      (c) 14                      (d) 10
- 

2.  $\left(\frac{5a^2}{6b}\right)\left(\frac{4b}{a^3}\right)$

- (a)  $\frac{5a^5}{24b^2}$                       (b)  $\frac{24b^2}{5a^5}$                       (c)  $\frac{10b}{3a}$                       (d)  $\frac{10}{3a}$
- 

3.  $(2y - 3)^2 =$

- (a)  $4y^2 + 9$                       (b)  $4y^2 - 6y + 9$                       (c)  $4y^2 - 12y + 9$                       (d)  $4y^2 + 12y + 9$
- 

4. One number is 8 less than another. If twice the larger number is equal to four times the smaller, what is the smaller number?

- (a) 8                      (b) 4                      (c) 12                      (d) 16
- 

5.  $\frac{3x}{4} - \frac{2x}{5} + \frac{x}{2} =$

- (a)  $\frac{x}{10}$                       (b)  $\frac{3x}{10}$                       (c)  $\frac{17x}{20}$                       (d)  $\frac{33x}{20}$
- 

6. Which of these are equivalent?

I.  $x > -3$

II.  $x - 4 < -8$

III.  $-2x < 8$

- (a) I and II only                      (b) I and III only                      (c) I, II, and III                      (d) none of them
- 

7. If  $x - 3y = 8$  and  $y = 2x + 1$ , then  $x =$

- (a) -1                      (b)  $-\frac{11}{5}$                       (c)  $-\frac{5}{7}$                       (d) 1



15. What is the equation of a vertical line through  $(-8, 10)$ ?

- (a)  $y = -8$       (b)  $y = 10$       (c)  $x = -8$       (d)  $x = 10$
- 

16. Find the point-slope form of an equation of the line that passes through the given point and has the given slope  $(-3, -2)$   $m = \frac{1}{2}$

- (a)  $y + 2 = \frac{1}{2}(x - 3)$       (b)  $y - 2 = \frac{1}{2}(x - 3)$   
(c)  $y - 2 = \frac{1}{2}(x + 3)$       (d)  $y + 2 = \frac{1}{2}(x + 3)$
- 

17. The greatest common divisor of 20 and 36 is

- (a) 180      (b) 108      (c) 56      (d) 4      (e) 2
- 

18.  $2\frac{1}{4}$  yards is

- (a) 27 in.      (b) 36 in.      (c) 72 in.      (d) 81 in.      (e) 96 in.
- 

19. What is the midpoint of the line segment that runs between  $(-3, 1)$  and  $(1, 5)$ ?

- (a)  $(2, -2)$   
(b)  $(-2, 2)$   
(c)  $(-2, 6)$   
(d)  $(2, -6)$   
(e)  $(-1, 3)$
- 

20. One factor of  $3x^2 - 6x + 9$  is

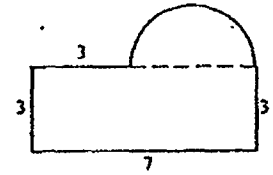
- (a)  $x^2 - 2x + 3$       (b)  $x^2 - 6x + 9$       (c)  $x^2 - 2x + 9$   
(d)  $x + 3$       (e) None of these
- 

21.  $(p^x)^y =$

- (a)  $p^{x+y}$       (b)  $pxy$       (c)  $yp^x$   
(d)  $p^{xy}$       (e) None of these

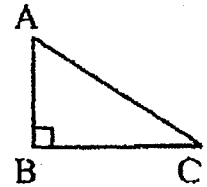
22. The perimeter of the figure with semicircular top is

- (a) 21                      (b)  $16 + 2\pi$                       (c)  $16 + 4\pi$   
 (d)  $16 + 8\pi$                       (e) none of these



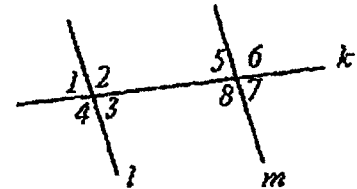
23. In the triangle shown below the measure of angle C is  $(x + 30)^\circ$ . The measure of angle A is

- (a)  $(60 - x)^\circ$                       (b)  $(90 - x)^\circ$                       (c)  $(120 - x)^\circ$   
 (d)  $(x - 60)^\circ$                       (e)  $(x - 120)^\circ$



24. Lines  $l$  and  $m$  intersect line  $k$ . Assume angles 4 and 7 are supplementary. Then we can conclude that

- (a) lines  $l$  and  $m$  are perpendicular  
 (b) angle 8 and angle 1 are congruent  
 (c) lines  $l$  and  $m$  are parallel  
 (d) angles 1 and 2 are complementary  
 (e) angles 1 and 5 are supplementary



25. Subtract  $5x^2 - 9$  from  $7x^2 - x + 1$

- (a)  $2x^2 - x + 10$                       (b)  $-2x^2 + x - 10$                       (c)  $12x^2 - x - 8$   
 (d)  $2x^2 - x - 8$                       (e) None of these.

26.  $2u(3u + 4) + 3u(2u + 1) =$

- (a)  $6u^2 + 11u$                       (b)  $12u^2 + 11u$                       (c)  $12u^2 + 5u$   
 (d)  $12u^2 + 5$                       (e) None of these

27. A bookstore's markup for textbooks is 40%. What is the wholesale price for a textbook that sells for \$50.75?

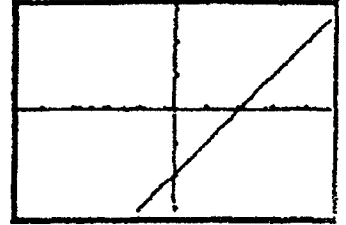
- (a) \$36.25                      (b) \$71.05                      (c) \$30.45  
 (d) \$8.67                      (e) \$20.30

28. Which is the equation of the corresponding graph?

(a)  $y = 2x$   
 (d)  $y = -x$

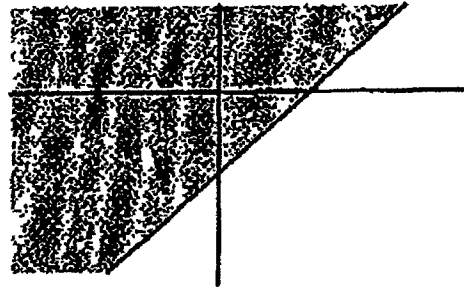
(b)  $x = y + 2$   
 (e)  $y = 5$

(c)  $-2x + y = 1$



29. If  $a > 0$ , the shaded region below is best represented by

- a.  $y \leq ax + b$
- b.  $y \leq -ax + b$
- c.  $y > ax + b$
- d.  $y > -ax + b$
- e.  $y = ax + b$



30. If  $c = -2$ , then  $|2 - c| - |-3c| =$

(a) 6

(b) -6

(c) 10

(d) 2

(e) -2

31. Betty wished to build a rectangular dog run along the side of her garage. The garage will serve as one of the longer sides of the run. If she has 50 feet of fencing and wishes the run to be 3 times longer than it is wide, how many square feet will the fencing enclose?

(a) 80 sq. ft.

(b)  $117 \frac{1}{8}$  sq. ft.

(c) 250 sq. ft.

(d) 300 sq. ft.

(e)  $468 \frac{3}{4}$  sq ft

32. What is the next term in the geometric series  $16, -4, 1, -\frac{1}{4}, \dots$ ?

(a)  $-\frac{1}{8}$

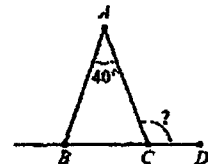
(b) 0

(c)  $\frac{1}{16}$

(d)  $\frac{1}{8}$

(e)  $\frac{1}{2}$

33. As shown in the figure to the right,  $\triangle ABC$  is isosceles with the length of  $AB$  equal to the length of  $AC$ . The measure of angle  $A$  is  $40^\circ$  and points  $B, C,$  and  $D$  are collinear. What is the measure of  $\angle ACD$ ?



(a)  $70^\circ$

(b)  $80^\circ$

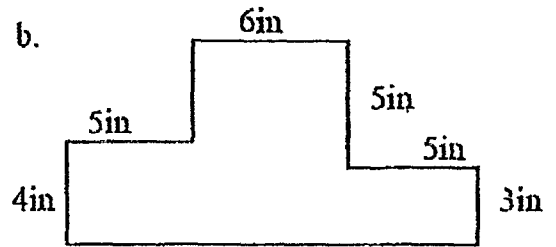
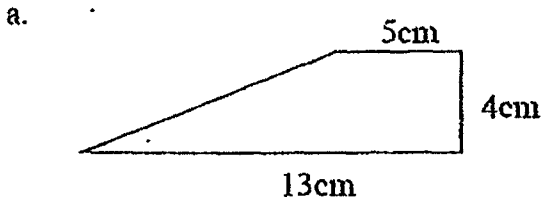
(c)  $110^\circ$

(d)  $140^\circ$

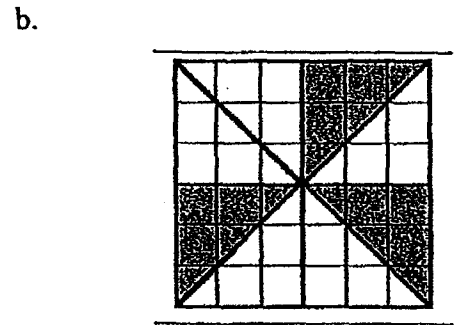
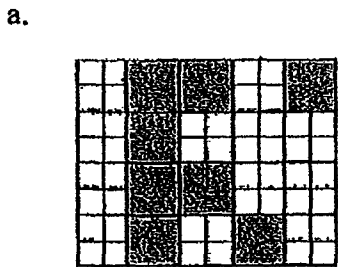
(e)  $160^\circ$

- Show formulas used and show your work

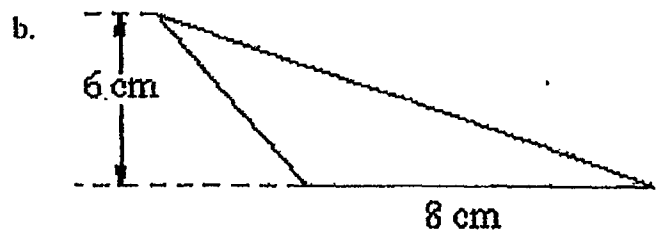
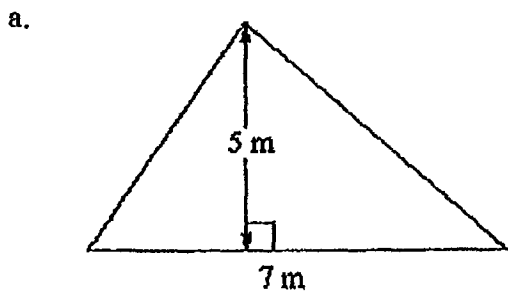
34. Find the area of region composed of rectangles and/or right triangles. Indicate units.



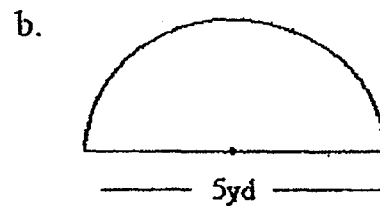
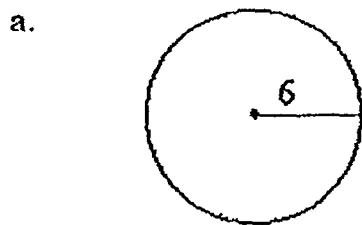
35. Express shaded area of region composed of rectangles as fractions of total area



36. Find area of triangle. Indicate units.

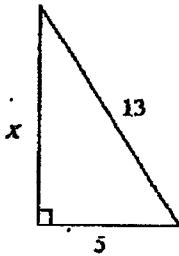


37. Find area of circle or semicircle given radius or diameter. Indicate units.

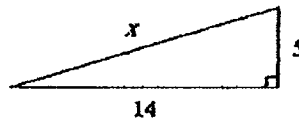


38. Find  $x$  in each of the following right triangles.

a.



b.



39. A flagpole has cracked 7 feet from the ground and fallen as if hinged. The top of the flagpole hit the ground 24 feet from the base. How tall was the flagpole before it fell?

... - Open Ended

40. Four friends buy 36 Cookies for \$12. Each person contributes the following amount of money:

Jose--\$2

Jessica--\$3

Terrell--\$4

Sammy--\$3



Each person gets the number of cookies proportional to the money paid. Draw a circle graph to represent the amount of cookies each got.

Draw another circle graph to show how many each would have if Ted gives half of his cookies to Tom.