MCAS Review

Topic #5:
Full Practice
Test 1

Practice Test 1
Mathematics
SESSION 1

You may use your reference sheet during this session.
*You may **not** use a calculator during this session.*

DIRECTIONS

This session contains fourteen multiple-choice questions, four short-answer questions, and three open-response questions. Mark your answers to these questions on your answer sheet.

#1 Which of the following is the largest?

A. 3^4

B. 2^5

C. 5^3

D. 6^2

#2 Which of the following is equivalent to the expression below?

$$x + 7x + 3y - y$$

A. $8x + 2y$

B. $10xy$

C. $7x + 3y$

D. $7x + 4y$

#3 In a card game, Andy scored 22, 5, 22, 13, 12, 24, 24, 9, 20, and 19 points. What is the **mean** number of points Andy scored?

A. 17

B. 18

C. 19

D. 24

#4 How many real numbers are between 1.52 and 1.54?

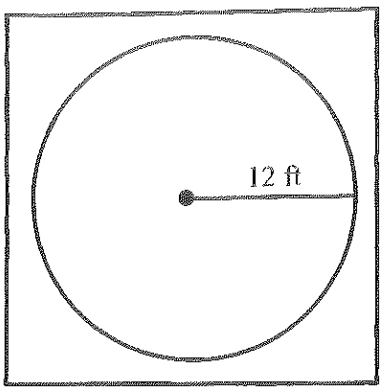
A. none

B. 100

C. 1000

D. more than 1000

5. A rotating sprinkler is used to water a yard. The radius of the area being sprayed is 12 feet. What is the wet area of the yard?



A. 38 square feet
B. 120 square feet
C. 144 square feet
D. 452 square feet

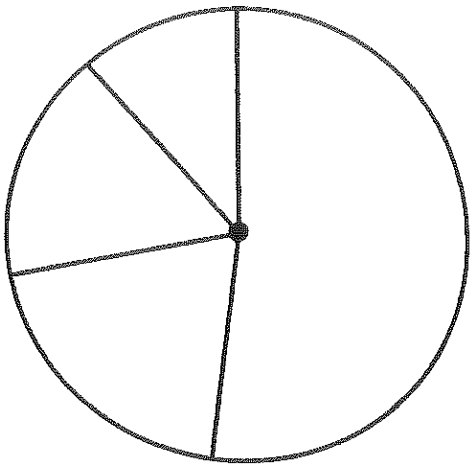
6. What is the value of x in the equation below?

$$9x - 5 = (5)(5) + 15$$

A. 4
B. 5
C. 7
D. 40

7. Which is the slope of a line that passes through the points (2, 2) and (−3, −3)?

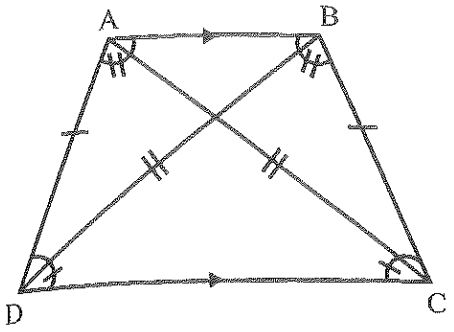
A. 1
B. −1
C. 2
D. −2



8. Which set of percents would best fit the pie graph shown above?

A. 55%, 25%, 13%, 7%
B. 50%, 18%, 12%, 20%
C. 52%, 20%, 17%, 11%
D. 48%, 22%, 20%, 10%

9. Which of the following must be true for the trapezoid shown below?



A. Lines AB and CD are parallel.
B. Line BC and AD are perpendicular.
C. $\angle A$ and $\angle C$ are congruent.
D. $\angle A$ and $\angle D$ are congruent.

10. A polygon was drawn on a piece of paper.

- Each of its interior angles is a right angle.
- Opposite sides are congruent.
- Adjacent sides are not congruent

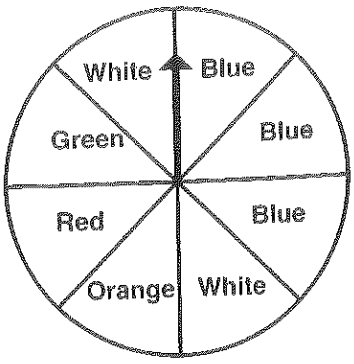
The polygon **must** be which of the following?

A. a rectangle
B. an equilateral triangle
C. a trapezoid
D. a rhombus

11. Kristen has a bag of 40 jelly beans. Five of these jelly beans are pink, 3 are blue, 10 are yellow, 2 are orange, 10 are green, 8 are black, and 2 are white. If Kristen reaches in without looking, what is the probability that she will pull out a white jelly bean?

A. $\frac{1}{40}$
B. $\frac{1}{20}$
C. $\frac{1}{5}$
D. $\frac{1}{4}$

12 Find the probability of spinning "blue" on the spinner below.



A. $\frac{1}{8}$

B. $\frac{3}{8}$

C. $\frac{1}{4}$

D. $\frac{1}{2}$

13 What is the volume of a cube that has an edge of 4 inches?

A. 12 in^3

B. 16 in^3

C. 64 in^3

D. 96 in^3

14 What is the next number in this geometric sequence?

9.6, 4.8, 2.4, 1.2 ____

A. 0

B. 0.3

C. 0.5

D. 0.6

Questions 15 and 16 are short-answer questions. Write your answer to these questions in the boxes provided on your answer sheet. Do not write your answers in this test section. You may do your figuring on the answer sheet.

15 The slope of the line containing the points (15,7) and (3,y) is $\frac{3}{4}$. What is the value of y?

16 The following stem-and-leaf plot shows the average temperature in Tampa each day during the month of November.

Stem	Leaf
6	4, 6, 7, 8, 8, 9, 9, 9, 9
7	0, 0, 0, 1, 1, 2, 2, 4, 4, 4, 4, 5, 5, 6, 7, 9
8	0, 0, 1, 1, 1

What percent of days had an average temperature above 70°?

Question 17 is an open-response question.

- **BE SURE TO ANSWER ALL PARTS OF THE QUESTION.**
- **Show all your work (diagrams, tables, or computations) on your answer sheet.**
- **If you do the work in your head, explain in writing how you did the work.**

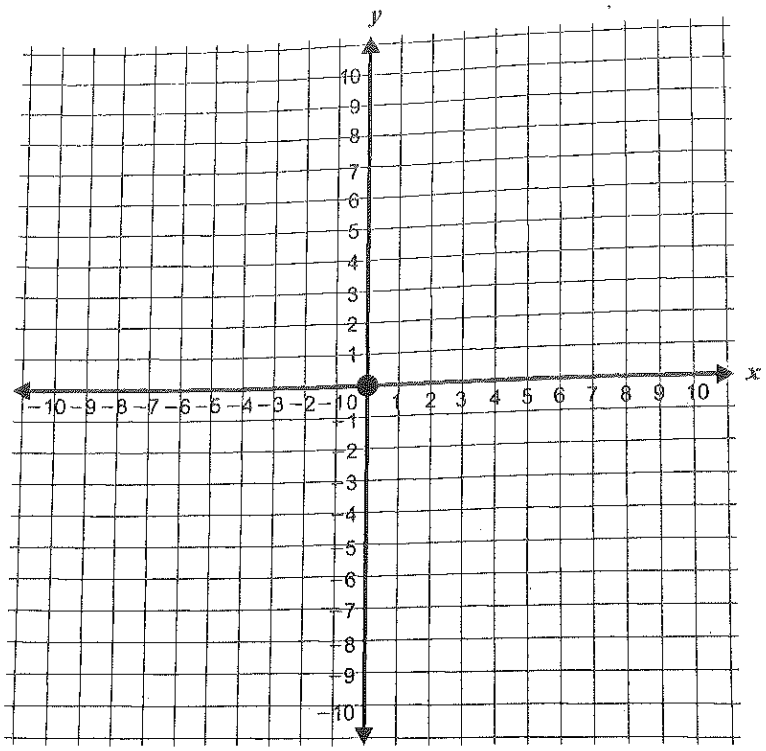
Write your answer to question 17 in the space provided on your answer sheet.

17 The table below can be used to graph coordinates of x and y.

x	y

a. Fill in the table with the values of x and y in the equation $y = 2x - 1$.

b. Graph the equation in the coordinate grid.



c. Using the coordinates of two of the points you used in the table, determine the slope of the line you graphed.

d. Determine the slope of a parallel line. Explain your answer.

Questions 18 and 19 are short-answer questions. Write your answers to these questions in the boxes provided on your answer sheet. Do not write your answers in this test booklet. You may do your figuring on the answer sheet.

18 A sphere has a surface area of 113.04 square meters. What is the radius of the sphere? Show all your work. Use 3.14 as the value of π.

19 What is the value of the expression below?

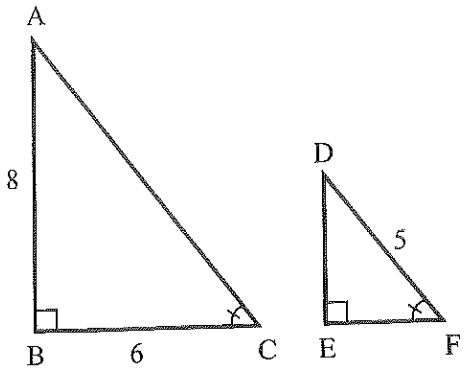
$$(6 - 2)^3 + 6 \div 10$$

Question 20 and 21 are open-response questions.

- BE SURE TO ANSWER AND LABEL ALL PARTS OF EACH QUESTION.
- Show all your work (diagrams, tables, or computations) on your answer sheet.
- If you do the work in your head, explain in writing how you did the work.

Write your answer to question 20 in the space provided on your answer sheet.

20 Look at the triangles shown below.



a. Determine the length of the hypotenuse in ΔABC.

b. Explain in geometric terms why ΔABC is similar to ΔDEF.

c. Find the length of line ED and EF in ΔDEF.

Write your answer to question 21 in the space provided on your answer sheet.

21 The prices of tickets to a school musical are shown on the sign below.

Seaside Musical Gala
Adults $15
Children $10

a. During the first night, 300 adult tickets were sold. The total income from ticket sales was $5,600. How many children's tickets were sold during the first night? Show or explain how you got your answer.

For parts (b), (c), and (d), define x and y as follows:

- x = the number of adult tickets sold
- y = the number of children's tickets sold

b. During the second night, a total of 700 tickets were sold. Write an equation that expresses the total number of tickets sold during the second night in terms of x and y.

c. The total income from ticket sales on the second night was \$10,000. Write an equation in terms of x and y that expresses the total income during the second night from the sale of adult tickets at \$15 each and children's tickets at \$10 each.

d. Using your two equations from parts (b) and (c) as a system of equations, solve for x and y. Show or explain how you got your answer.

Practice Test 1
Mathematics
SESSION 2

You may use your reference sheet during this session.
You may use a calculator during this session.

DIRECTIONS
This session contains eighteen multiple-choice questions and three open-ended questions. Mark your answers to these questions on your answer sheet.

22 What is the area of a circle with a radius of 8 centimeters?

A. 25 cm^2
B. 50 cm^2
C. 201 cm^2
D. 402 cm^2

23 **Number of Students in Emma's School**

Grade	Number of Students
1	20
2	28
3	27
4	22
5	25
6	26
7	27

Use the data in the chart to determine the **median**.

A. 20
B. 22
C. 25
D. 26

24 There are 20 straws in a box; some are red and some are blue. The probability of reaching into the box and pulling out a red straw is $\frac{3}{5}$. How many blue straws are in the box?

A. 3
B. 6
C. 8
D. 12

25 An irregular hexagon has a perimeter of 36 inches. Five of its sides are 3, 4, 6, 8, and 12. What is the length of the remaining side?

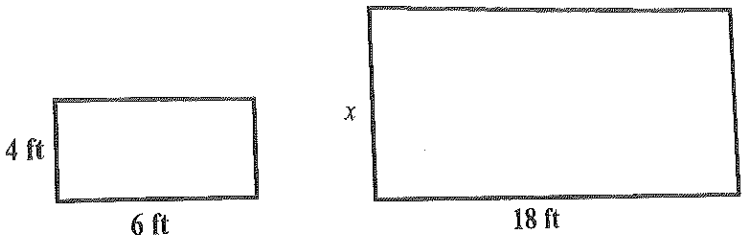
A. 3 inches
B. 4 inches
C. 6 inches
D. 8 inches

26 What is the value of the expression below?

$$2(4) + 4^2$$

A. 16
B. 22
C. 24
D. 28

27 Find the missing length (x) of the pair of similar figures shown below.



A. 12 feet
B. 20 feet
C. 27 feet
D. 30 feet

28 Which of the following properties of real numbers is demonstrated by the equation below?

$$a(b + c) = a(b) + a(c)$$

A. distributive property
B. inverse property of addition
C. commutative property of addition
D. associative property of addition

29 Which of the following is equivalent to the expression below?

$$5(x - 7y) - 7(x + 5y)$$

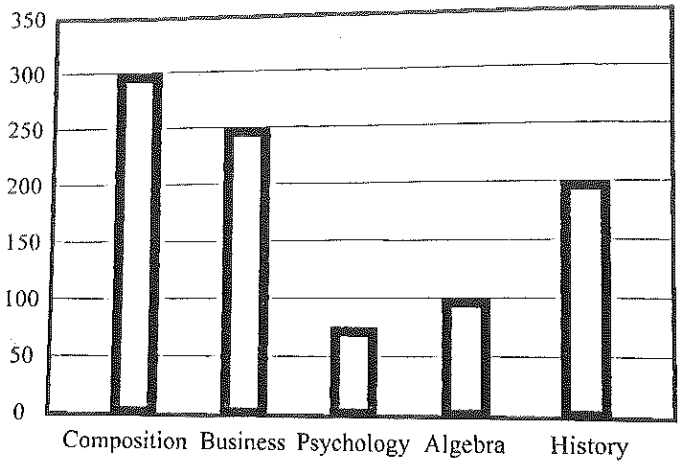
A. $-2x - 70y$

B. $-72xy$

C. $-2x$

D. $2x + 70y$

College Enrollment in Introductory Courses at Anytown University



30 The number of students enrolled in introductory courses at a university is shown on the graph above. How many more students are enrolled in composition than in psychology?

A. 200

B. 225

C. 250

D. 375

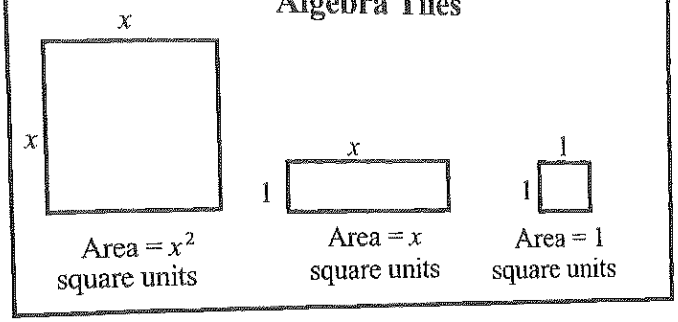
Question 31 is an open-response question.

- **BE SURE TO ANSWER AND LABEL ALL PARTS OF THE QUESTION.**
- **Show all your work (diagrams, tables, or computations) on your answer sheet.**
- **If you do the work in your head, explain in writing how you did the work.**

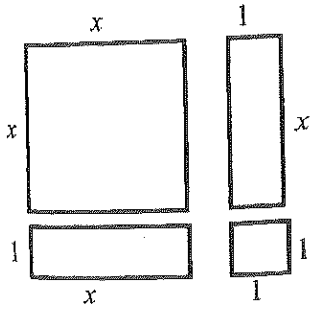
Write your answer to question 31 in the space provided on your answer sheet.

31 Use the diagram in the box to answer the question.

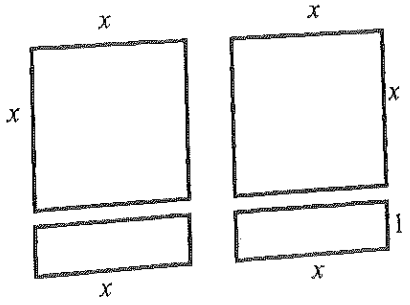
Algebra Tiles



In the figures below, algebra tiles are arranged in a rectangular array to represent each expression.



$x^2 + 2x + 1$



$2x^2 + 2x$

Show how to use algebra tiles to represent each expression below in a rectangular array. If an expression cannot be represented, explain why not.

a. $3x^2 + 3x + 2$

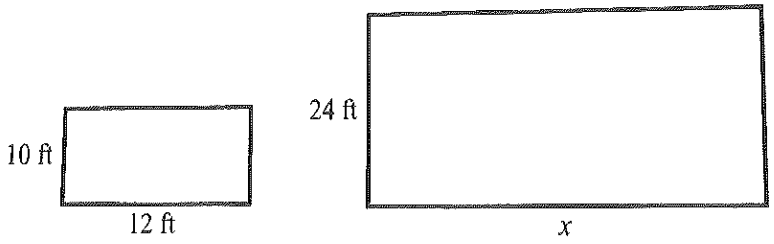
b. $2x^2 + 6x + 4$

Mark your answers to multiple-choice questions on your answer sheet.

32 If the mean number of people who visited a museum over 5 days is 250, what is the total attendance during the 5 days?

A. 750
B. 1,000
C. 1,250
D. 2,500

33 To the nearest integer, find the missing length (x) of the pair of similar figures shown below.



A. 12 feet
B. 20 feet
C. 29 feet
D. 27 feet

34 Emily works in a small crafts store where the cash register does not compute the sales tax. If the sales tax is 6%, what amount should Emily add to a purchase of $12.00?

A. $0.60
B. $0.72
C. $6.00
D. $7.20

35 Which of the following is the largest?

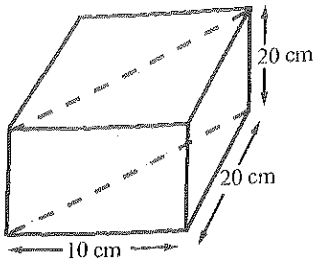
A. $2\sqrt{15.5}$
B. $15.5\sqrt{2}$
C. $3\sqrt{14.6}$
D. $14.6\sqrt{3}$

36 If one out of 5 people exercise each day, how many people can be expected to exercise daily in a city of 25,000 people?

A. 500
B. 1,500
C. 2,500
D. 5,000

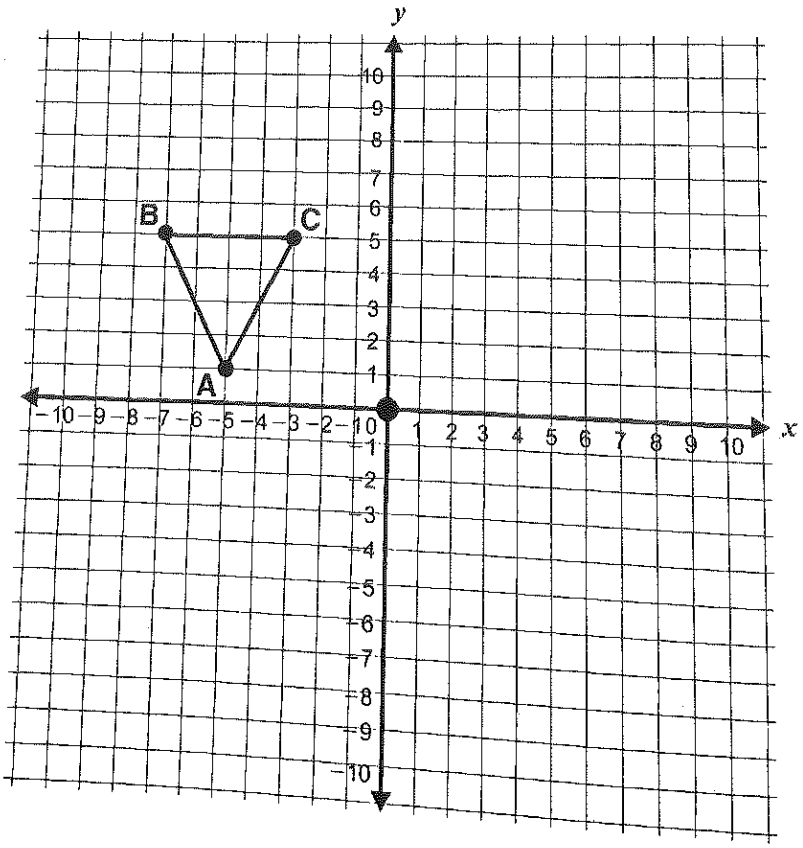
Question 37 is a short-answer question.

37 In the figure below, the shaded area is a planar cross section of a rectangular solid.



What is the area, in square centimeters, of the cross section?

38 The triangle ABC has vertices at the coordinates $(-5, 1)$, $(-7, 5)$, and $(-3, 5)$, as shown below.

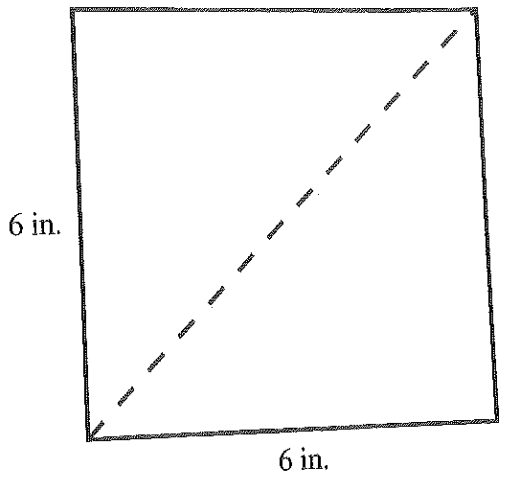


What are the coordinates of the vertices of triangle ABC when it is reflected over the x-axis?

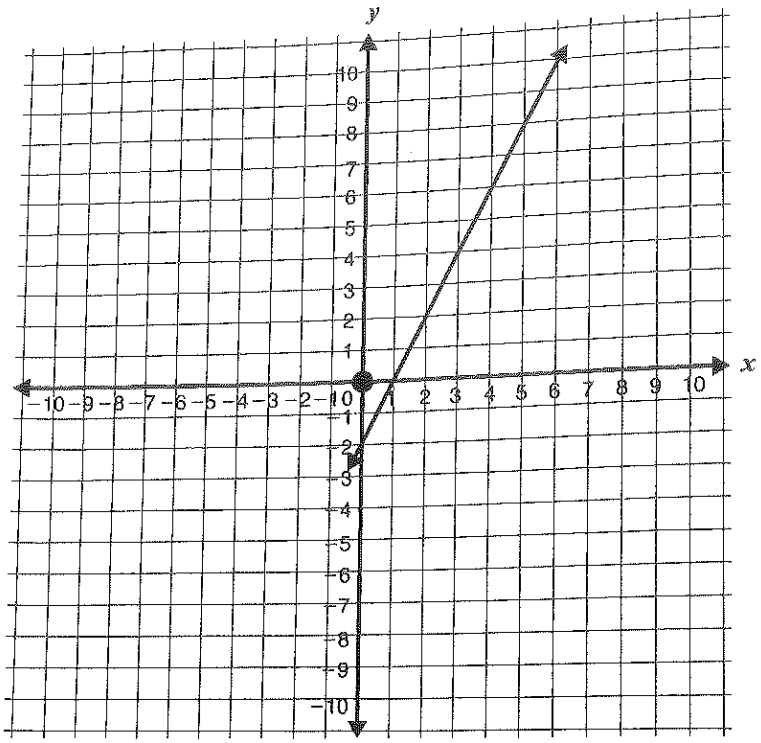
A. $(-7, -5), (-3, -5), (-5, -9)$
B. $(-5, -1), (-7, -5), (-3, -5)$
C. $(5, 1), (3, 5), (7, 5)$
D. $(5, -1), (7, -5), (3, -5)$

89 A square piece of paper, each side six inches long, is folded diagonally on the dotted line, as shown below. To the nearest inch, how long is the crease made in the fold?

A. 6 inches
B. 8 inches
C. 36 inches
D. 72 inches



40 A line is shown on the coordinate grid below.



Which of the following best represents an equation of this line?

A. $y = \frac{1}{2}x + 2$

B. $y = 2x + 2$

C. $y = 2x - 2$

D. $y = \frac{1}{2}x - 2$

Questions 41 and 42 are open-response questions.

- **BE SURE TO ANSWER AND LABEL ALL PARTS OF EACH QUESTION.**
- **Show all your work (diagrams, tables, or computations) in your answer sheet.**
- **If you do the work in your head, explain in writing how you did the work.**

Write your answer to these questions in the space provided on your answer sheet.

41 The total surface area of a cylinder is given by S.A. $= 2\pi rh + 2\pi r^2$, where r is the radius and h is the height.

a. What is the total surface area of a tin can in which the radius is 3 inches and the height is 10 inches? (Round off to the nearest hundredth)

b. The cost of the material for this can is \$0.25 per square inch. What is the total cost in making this can? (Nearest hundredth)

c. If the radius is doubled, by what percent will the total cost increase? (Nearest whole number percent)

42 From 1980 to 1990, the population of Kate's town decreased from 150,000 to 75,000.

a. What is the **percent of decrease** in the population over this 10-year period?

b. If the population decreased by the same percent in the next 10-year period, from 1990 to 2000, what was the population in the year 2000?

c. Assume the population continues to decrease at the same rate as it did from 1980 to 1990. Write an expression that would represent the population of Kate's town in the year 2010.