Mathematics: Calculator

Lesson 1

You may use a calculator to answer these questions. Circle the correct answer. Be prepared to explain how you got your answer.

Use the table below to answer question 1.

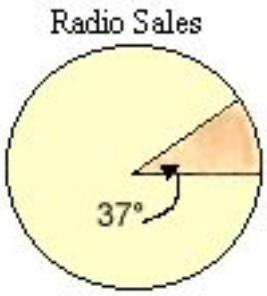
Student	Score
A	88
B	65
C	91
D	36
E	72
F	57
G	50
H	85
I	62
J	48

1. The table above shows the scores of 10 students on a final examination. What is the range of these scores?

A. 33 B. 40

C. 55 D. 88

Use the figure below to answer question 2.



2. The entire circle shown above represents a total of 2,675 radios sold. Of the following, which is the best approximation of the number of radios represented by the shaded sector of the circle?

A. 70 B. 275

C. 985 D. 25,880

Lesson 2

You may use a calculator to answer these questions. Circle the correct answer. Be prepared to explain how you got your answer.

Use the table below to answer question 1.

A	B
2	5
4	9
6	13
8	17
14	?

1. If the pattern shown in the table were continued, what number would appear in the box at the bottom of column B next to 14?

   A. 21

   B. 23

   C. 25

   D. 29

2. Ken bought a used car for $5,375. He had to pay an additional 15 percent of the purchase price to cover both sales tax and extra fees. Of the following, which is closest to the <u>total</u> amount Ken paid?

   A. $5,510

   B. $5,760

   C. $5,940

   D. $6,180

Lesson 3

You may use a calculator to answer these questions. Circle the correct answer. Be prepared to explain how you got your answer.

1. What is the distance between the points (2, 10) and (-4, 2) in the *xy*-plane?

   A. 6

   B. 8

   C. 10

   D. 14

2. The following formula can be used to predict the weight of boys between the ages of 1 and 8:

   $w = 5a + 17$

   where w is the average weight in pounds, and a is the boy's age in years.

   According to this formula, how much weight will a boy gain each year?

   A. 5 pounds

   B. 11 pounds

   C. 17 pounds

   D. 22 pounds

Lesson 4

You may use a calculator to answer these questions. Circle the correct answer. Be prepared to explain how you got your answer.

1. It takes 64 identical cubes to <u>half</u> fill a rectangular box. If each cube has a volume of 8 cubic centimeters, what is the volume of the box in cubic centimeters?

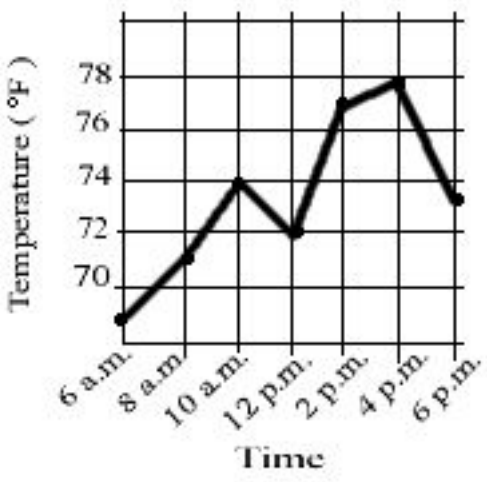
   A. 1,024

   B. 512

   C. 128

   D. 16

Use the graph below to answer question 2.



2. According to the graph above, the temperature at 10 a.m. is approximately how many degrees greater than the temperature at 8 a.m.?

   A. 1

   B. 1.5

   C. 2

   D. 3

Lesson 5

You may use a calculator to answer these questions. Circle the correct answer. Be prepared to explain how you got your answer.

1. The population of the United States is approximately 250 million, and the national debt is approximately 4 trillion dollars. If this debt were divided equally among the population, what would be the debt, in dollars, per person?

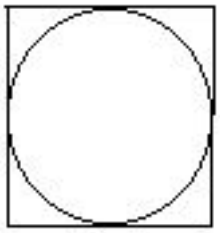
   A. 16

   B. 1,600

   C. 16,000

   D. 1,600,000

Use the figure below to answer question 2.



2. The length of a side of the square above is 6. What is the length of the radius of the circle?

   A. 2

   B. 3

   C. 4

   D. 6

Lesson 6

You may use a calculator to answer these questions. Circle the correct answer. Be prepared to explain how you got your answer.

Use the equations below to answer question 1.

4 x ☐ = ☐ and ☐ x 3 = ☐

1. What number, if placed in each box above, would make both equations true? **(A.4)**

   A. 0

   B. 1

   C. 2

   D. 3

2. A certain machine produces 300 nails per minute. At this rate, how long will it take the machine to produce enough nails to fill 5 boxes of nails if each box will contain 250 nails?

   A. 4 minutes

   B. 4 minutes, 6 seconds

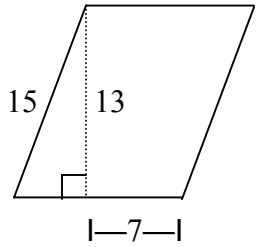
   C. 4 minutes, 10 seconds

   D. 4 minutes, 50 seconds

Lesson 7

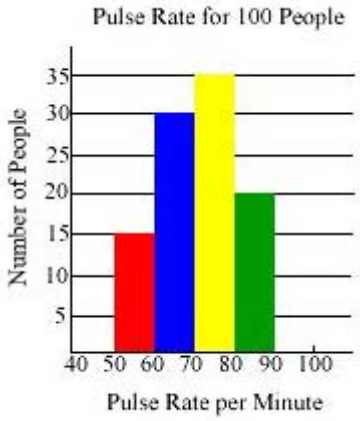
You may use a calculator to answer these questions. Be prepared to explain how you got your answer.

Use the figure below to answer question 1.



1. To the nearest whole number, what is the area of the parallelogram above?

Use the graph below to answer question 2.



2. The pulse rate for a group of 100 people is shown in the graph above. What is the average pulse rate per minute for these 100 people? (NOTE: Use the midpoint of each interval to represent the pulse rate for the entire interval. For example, 55 would be used for the pulse rate of the 15 people in the 50–60 group.)

Lesson 8

This question requires you to show your work and explain your reasoning. Your answer should be clear enough so that another person could read it and understand your thinking. It is important that you show <u>all</u> of your work.

1. The table below shows the daily attendance at two movie theaters for 5 days and the mean (average) and the median attendance.

	Theater A	**Theater B**
Day 1	100	72
Day 2	87	97
Day 3	90	70
Day 4	10	71
Day 5	91	100
Mean (average)	75.6	82
Median	90	72

A. Which statistic, the mean or the median, would you use to describe the typical daily attendance for the 5 days at Theater A? Justify your answer.

B. Which statistic, the mean or the median, would you use to describe the typical daily attendance for the 5 days at Theater B? Justify your answer.

Lesson 9

This question requires you to show your work and explain your reasoning. Your answer should be clear enough so that another person could read it and understand your thinking. It is important that you show <u>all</u> of your work.

1. A rectangular school banner is 6 feet by 4 feet high.

   A. If the banner were 5 feet wide, how high would it have to be in order to have the same area as the first banner?

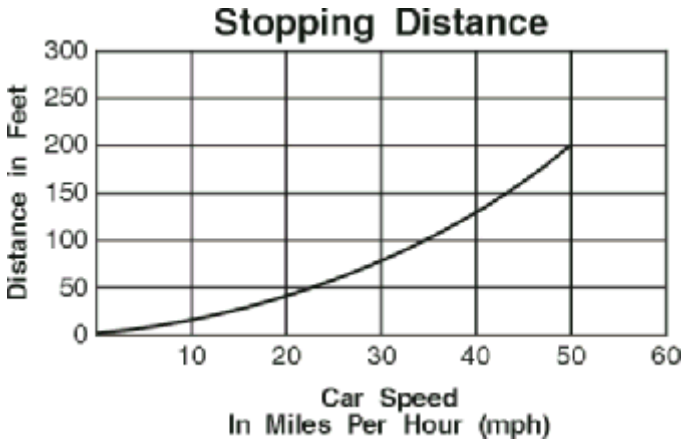
   B. Give three more examples of rectangular banners that would have areas the same as the first banner but with dimensions different from both the first banner and the banner in part A. Make the width greater than the height in each example.

   C. Suppose that the length of a rectangle with an area of 24 square units is unknown. Let x represent the length. Write an expression for the width in terms of x. Use this expression to write a formula for the perimeter, p, in terms of the unknown value, x.

Lesson 10

You may use a calculator to answer these questions. Circle the correct answer. Be prepared to explain how you got your answer.

The graph below shows how far a typical car travels after the brakes are applied. Use the graph to answer question 1.



1. A car traveling down the street stopped 100 feet after the brakes were applied. About how fast was the car traveling?

   A. 30 miles per hour

   B. 34 miles per hour

   C. 43 miles per hour

   D. 100 miles per hour

2. It takes 18 frames to create one second of an animated cartoon. How many frames would the cartoon artists have to create for a fifteen-minute cartoon?

   A. 270

   B. 900

   C. 1,620

   D. 16,200

Lesson 11

You may use a calculator to answer these questions. Circle the correct answer. Be prepared to explain how you got your answer.

1. A math test was given by Mr. Thorn. The table below shows the time the students took to complete the test.

Time in minutes	Number of students
38	𝍸 |||
36	𝍸
34	
32	𝍸
30	𝍸 𝍸
28	||

Which of the following is the **best** approximation of the average (mean) amount of time spent on the test?

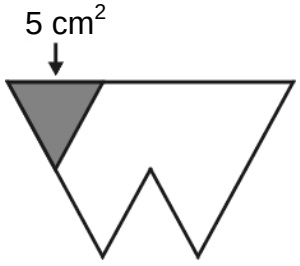
A. 27 minutes

B. 30 minutes

C. 33 minutes

D. 38 minutes

Use the figure below to answer question 2.



2. A scale drawing of a figure is shown above. If the actual area of the shaded portion of the figure is 5 cm2, what is the area of the entire figure?

A. 30 cm^2

B. 35 cm^2

C. 40 cm^2

D. 45 cm^2

Lesson 12

You may use a calculator to answer these questions. Circle the correct answer. Be prepared to explain how you got your answer.

Use the table below to answer question 1.

Distance (cm)	6.0	9.2	16.0	20.8
Time (seconds)	1.5	2.3	4.0	5.2

1. This table illustrates the amount of time (t) it takes an object to travel a specific distance. How far will the object have traveled at $t = 6$ seconds if the rate remains constant?

   A. 22.0 cm

   B. 24.0 cm

   C. 24.8 cm

   D. 26.0 cm

2. Find the 10th term of the sequence below.

   5, 11, 21, 35, . . .

   A. 80

   B. 95

   C. 203

   D. 245

Lesson 13

You may use a calculator to answer these questions. Circle the correct answer. Be prepared to explain how you got your answer.

1. If 5 hamburgers and 3 orders of fries cost $6.82, and 3 hamburgers and 2 orders of fries cost $4.25, what is the cost of 1 hamburger? (NOTE: Costs do not include tax.)

   A. $.69

   B. $.79

   C. $.89

   D. $.99

2. If y is less than 9, which one of the following must be true about $15 - y$?

   A. It is less than 15.

   B. It is less than 6.

   C. It is greater than 6.

   D. It is greater than 9.

Lesson 14

You may use a calculator to answer these questions. Circle the correct answer. Be prepared to explain how you got your answer.

Use the information in the table below to answer question 1.

Daily Requirement	
Body Weight (in pounds)	Vitamin ZZ (in milligrams)
150	200
100	?

1. The recommended daily requirement of vitamin ZZ is directly proportional to body weight. The table above shows that a person weighing 150 pounds should have 200 milligrams of vitamin ZZ daily. Which is the best approximation of the quantity of vitamin ZZ for a person weighing 100 pounds?

   A. 150 mg

   B. 130 mg

   C. 100 mg

   D. 75 mg

2. A jar contains both black and red balls. There are 15 black balls. The probability of selecting a black ball is $\frac{5}{8}$. How many red balls must be in the jar?

   A. 39

   B. 24

   C. 18

   D. 9

Lesson 15

You may use a calculator to answer these questions. Circle the correct answer. Be prepared to explain how you got your answer.

1. Six students volunteered to serve on a class president election committee. How many different three-person committees could be formed using the six students?

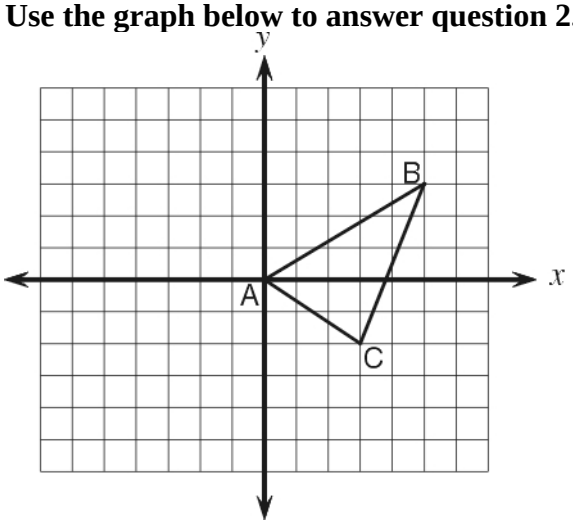
   A. 216

   B. 120

   C. 20

   D. 18

Use the graph below to answer question 2.



2. What will be the new coordinates of vertex C if the vertices of the triangle are reflected across the *x*-axis?

   A. (3, 2)

   B. (–3, 2)

   C. (–3, –2)

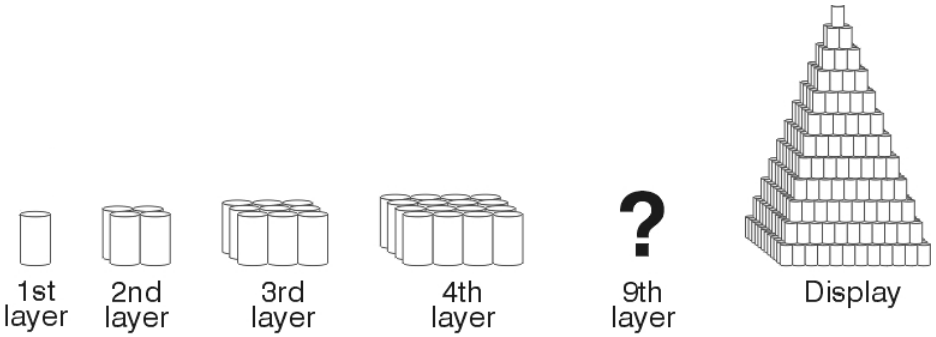
   D. (2, 3)

Lesson 16

You may use a calculator to answer these questions. Be prepared to explain how you got your answer.

1. Brian rents a carpet-cleaning machine to clean the carpet in his basement. It takes four hours to clean the carpet. If the machine costs $8 per hour plus a $25 rental fee, how much does Brian pay for the four-hour rental?

2. Pam works for Marvin's Family Market. She built a display stack using 12 layers of cans as shown below. How many cans did Pam need to build the 9th layer of the stack?



Lesson 17

This question requires you to show your work and explain your reasoning. Your answer should be clear enough so that another person could read it and understand your thinking. It is important that you show <u>all</u> of your work.

1. The junior class is planning a band concert as a fund-raiser. They are considering two popular bands: the Cautious Crew Band, who charge $250 plus 8% of the ticket sales, and the Muckrocket Band, who charge a flat fee of $500. The auditorium seats 375 people. Tickets for the concert will cost $4.50 each.

   If the junior class is certain that they will sell all the available tickets, which band would realize the most profit for the class? Explain how you found your answer.

Lesson 18

This question requires you to show your work and explain your reasoning. Your answer should be clear enough so that another person could read it and understand your thinking. It is important that you show <u>all</u> of your work.

Part A. Diagram 1 below shows a 2-by-2 block section of Elm City.

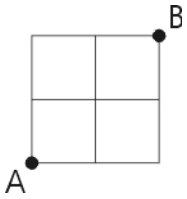


Diagram 1

1. Using Diagram 1, how many different routes can be traveled by car from point A to point B if travel must always be to the right or up?

Part B. Diagram 2 below shows the streets connecting the Elm City High School to the Elm City Post Office. The arrow on the diagram indicates that, for one block only, a street is one-way in the direction of the arrow.

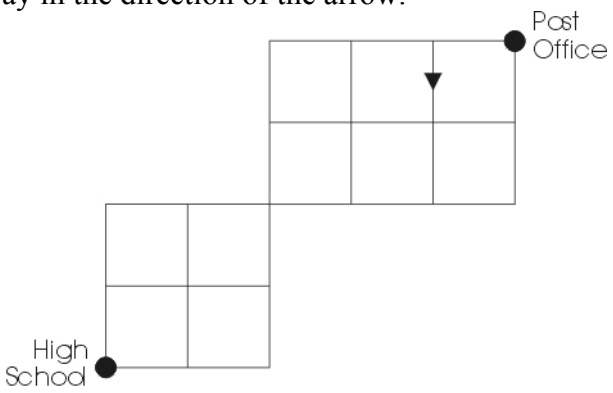


Diagram 2

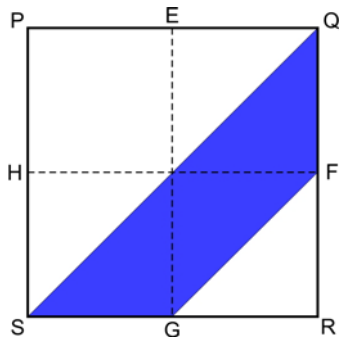
2. Using Diagram 2, how many routes can be traveled by car from the Elm City High School to the Elm City Post Office if travel must always be to the right or up?

Part C. Using Diagram 2, explain how having the one-way street affects the total number of routes that can be traveled.

Lesson 19

You may use a calculator to answer these questions. Circle the correct answer. Be prepared to explain how you got your answer.

Use the diagram below to answer question 1.



1. Points E, F, G, and H are midpoints of the sides of square PQRS. The shaded area is 3 square units. What is the area of square PQRS?

   A. 6 square units

   B. 7 square units

   C. 8 square units

   D. 9 square units

2. Which number would go in the box in the following sequence?

   6, 8, 12, 20, ☐, 68

   A. 28

   B. 30

   C. 32

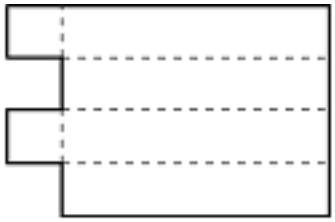
   D. 36

Lesson 20

You may use a calculator to answer these questions. Circle the correct answer. Be prepared to explain how you got your answer.

1. Which of the following patterns can be folded along the dotted lines to make a closed rectangular box with non-overlapping flaps?

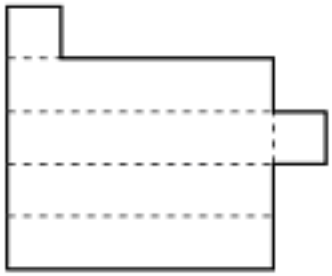
A.



B.

C.

D.



Lesson 20 (continued)

2. A concert promoter is having the seats in his auditorium numbered. He is paying the painter by the individual digit. If there are 65 seats, numbered 1 to 65, how many individual digits will the painter paint?

   A. 65

   B. 120

   C. 121

   D. 122

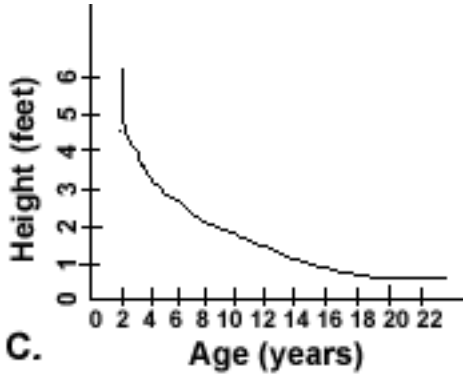
Lesson 21

You may use a calculator to answer these questions. Circle the correct answer. Be prepared to explain how you got your answer.

1. Which of the following graphs best illustrates the relationship between age and height in people?

A.

B.



C.

D.

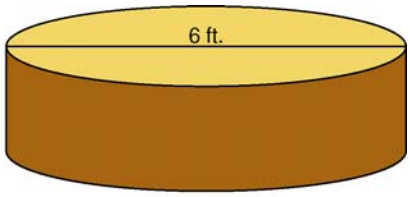
2. A home security system has a password that consists of a letter of the alphabet followed by three digits. If none of the digits 0–9 can be repeated, how many different passwords are possible?

   A. 53
   B. 156
   C. 18,720
   D. 26,000

Lesson 22

You may use a calculator to answer these questions. Circle the correct answer. Be prepared to explain how you got your answer.

Use the picture below to answer question 1.



1. A circular sandbox has a 6-foot diameter. About how many cubic feet of sand are needed to fill it to a height of 1.25 feet?

   A. 23.6 cubic feet

   B. 28.3 cubic feet

   C. 35.3 cubic feet

   D. 141.4 cubic feet

2. Jamie has test scores of 75, 83, and 90. Which inequality should he use to calculate the score, *t*, that he needs on his last test to get a test average of at least 85?

   A. $\frac{75+83+90+t}{3} \leq 85$

   B. $\frac{75+83+90+t}{4} \leq 85$

   C. $\frac{75+83+90+t}{3} \geq 85$

   D. $\frac{75+83+90+t}{4} \geq 85$

Lesson 23

You may use a calculator to answer these questions. Circle the correct answer. Be prepared to explain how you got your answer.

1. If the perimeter of an isosceles triangle is 20 units, the length of the base cannot be

   A. 10 units.

   B. 8 units.

   C. 6 units.

   D. 4 units.

2. Assume that the following equation is used to find the height of a person between the ages of 5 and 14.

   $h = h_o + 3(A - 5)$, where h_o = height in inches at age 5 and A = age in years

   If Angela is 36 inches tall at age 5, how tall should she be at age 14?

   A. 42 inches

   B. 63 inches

   C. 73 inches

   D. 78 inches

Lesson 24

You may use a calculator to answer these questions. Circle the correct answer. Be prepared to explain how you got your answer.

1. Suppose parallelogram ABCD has the following vertices:

   A (0, 6) B (10, 6) C (8, 0) D (–2, 0)

   What is the length of the diagonal from vertex A to vertex C in this parallelogram?

   A. 7 units
   B. 10 units
   C. 12 units
   D. 14 units

2. There are 6 people at a party. If everyone shakes hands with everyone else once, how many handshakes are there?

   A. 6
   B. 10
   C. 15
   D. 30

Lesson 25

You may use a calculator to answer these questions. Be prepared to explain how you got your answer.

1. During the first 7 days of delivering newspaper, Amanda delivered a total of 196 papers. On each day she increased the number of papers delivered by 4.

   How many newspapers did Amanda deliver the first day?

2. The Metro County High School plans to maintain one car for its driver training program. Each year the school depreciates the value of the car 25% based on its current value. When the value of the driver training car drops below $3,000, the school policy is to sell the car at the end of that year.

   How many cars would the school need to purchase over a 15-year period if it pays $9,200 per car?

Lesson 26

You may use a calculator to answer these questions. Be prepared to explain how you got your answer.

The sign below shows the taxi fares for the Halley Taxi Company (excluding tip). Use the taxi fares to answer question 1.

Halley Taxi Company Fares

$1.50 base fare
plus $0.75 for each 1/2 mile

1. If you take a $6\frac{1}{2}$ mile trip with the Halley Taxi Company, how much will you pay, excluding tip?

Use the equation below to answer question 2. You will need to use a scientific calculator.

$$\sqrt{8}\ N = 3^5$$

2. In the equation above, what is the value of N, rounded to the nearest tenth?

Lesson 27

You may use a calculator to answer these questions. Be prepared to explain how you got your answer.

Use the diagrams below to answer question 1.

The large triangle in Step 1 has an area equal to 1 unit.

1. In Step 2, it is divided into 4 congruent triangles, and the middle triangle is removed. The process continues until the total area in the remaining triangles is less than $\frac{1}{2}$ unit. How many steps does this take?

2. Collette is going to wallpaper a room. She needs to cover 1,056 square feet of wall. The wallpaper she wants comes in packages of 3 rolls. Each roll will cover 35 square feet. Which is a correct proportion to determine *x*, the number of packages she needs to buy?

   A. $\frac{3}{35} = \frac{x}{1,056}$

   B. $\frac{1}{105} = \frac{x}{1,056}$

   C. $\frac{35}{3} = \frac{x}{1,056}$

   D. $\frac{105}{1} = \frac{x}{1,056}$

Lesson 28

This question requires you to show your work and explain your reasoning. Your answer should be clear enough so that another person could read it and understand your thinking. It is important that you show <u>all</u> of your work.

1. You are given a sheet of paper approximately 0.004 inches thick. If you could fold it in half seven times, determine the thickness of the folded paper without using a ruler. Solutions may be organized in a chart, list, or other organizational method.

Lesson 29

You may use a calculator to answer these questions. Circle the correct answer. Be prepared to explain how you got your answer.

1. Kim's microwave oven has an "Add" button, which adds 10 seconds to the total cooking time for each time it is pressed. Kim set the cooking time for 2 minutes, then pressed the "Add" button x times. Which expression correctly represents the total number of minutes of cooking time?

   A. $(2+10x)$ minutes

   B. $(2+6x)$ minutes

   C. $\left(10+\frac{x}{2}\right)$ minutes

   D. $\left(2+\frac{x}{6}\right)$ minutes

2. This table shows how much a party will cost depending on how many people attend.

Number of guests	100	200	300
Total cost (dollars)	3,500	6,000	8,500

   Which function models the relationship between the number of guests, n, and the total cost, $c(n)$, shown in the table?

   A. $c(n) = 35n$

   B. $c(n) = 25n + 100$

   C. $c(n) = 25n + 1000$

   D. $c(n) = 25 + 1000n$

Lesson 30

You may use a calculator to answer these questions. Circle the correct answer. Be prepared to explain how you got your answer.

The table below lists total crude oil production in Louisiana in 1981 and 1982.

Year	Total Oil Production (in millions of barrels)
1980	?
1981	190
1982	170

1. If the mean annual production for the years 1980, 1981, and 1982 was 192 million barrels, how much crude oil was produced in Louisiana in 1980?

   A. 192 million barrels

   B. 194 million barrels

   C. 212 million barrels

   D. 216 million barrels

2. The pages of a book of poems are numbered 1 to 231. Jo randomly selects a single page to read. What is the probability that Jo will choose a page from 150 to 199, including both 150 and 199?

   A. $\frac{49}{230}$

   B. $\frac{49}{231}$

   C. $\frac{50}{230}$

   D. $\frac{50}{231}$

Lesson 31

You may use a calculator to answer these questions. Circle the correct answer. Be prepared to explain how you got your answer.

1. Compact discs are circular and have a circular center also, as in the figure below. The distance from the outer edge of the compact disc to the edge of the circular center is 5.25 centimeters.

If the diameter of the compact disc is 12 centimeters, what is the circumference of the circular center?

A. 0.05625π cm

B. 0.75π cm

C. 1.5π cm

D. 6.75π cm

2. The perimeter of a rectangular parking lot is one-fourth of a mile. The length is 350 feet. On a map, the perimeter of the parking lot is 10 inches. What is the width of the parking lot on the map?

A. 0.196 inches

B. 2.35 inches

C. 2.65 inches

D. 15.1 inches

Lesson 32

You may use a calculator to answer these questions. Circle the correct answer. Be prepared to explain how you got your answer.

1. When Marty was planning a 60-mile road trip, he estimated that his average road speed would be 60 miles per hour (mph), and used this average speed to estimate the length of time the trip would take. During the trip, Marty unexpectedly had to drive on a curvy road for 10 miles at an average speed of 40 mph. How would this affect his time estimate for the total trip?

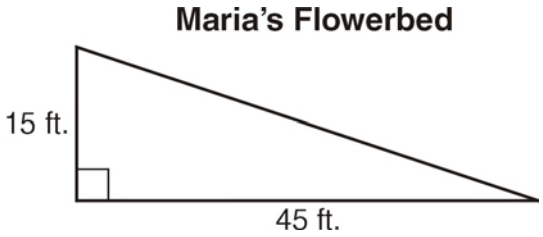
   A. It would increase his estimated time by 5 minutes.

   B. It would increase his estimated time by 10 minutes.

   C. It would decrease his estimated time by 5 minutes.

   D. It would decrease his estimated time by 10 minutes.

Use the diagram below to answer question 2.



2. Maria plans to put a 3-inch layer of mulch in her flowerbed. Mulch comes in 3-cubic-foot bags. Which is the best estimate of the number of bags of mulch Maria will need?

   A. 30 bags

   B. 40 bags

   C. 60 bags

   D. 84 bags

Lesson 33

You may use a calculator to answer these questions. Circle the correct answer. Be prepared to explain how you got your answer.

1. An adult dog should consume at least 120 mg of calcium per day for each pound of its weight. If w represents the weight of a dog (in pounds) and c represents the total amount of calcium that the dog should consume each day, which inequality correctly represents the relationship between c and w?

   A. $w \geq 120c$

   B. $w \geq 120 + c$

   C. $c \geq 120w$

   D. $c \geq 120 + w$

2. A patient is given 100 mg of a prescription medication. The equation below represents the amount, a, of this medication remaining in the patient's body after h hours.

$$a = 100(0.9)^h$$

   How much of the medication remains in the patient's body after two hours?

   A. 81 mg

   B. 90 mg

   C. 180 mg

   D. 8100 mg

Lesson 34

You may use a calculator to answer these questions. Circle the correct answer. Be prepared to explain how you got your answer.

Look at the number of black dots in each of the triangles below.

1. How many black dots would there be in a triangle with a bottom row of 8 dots?

   A. 21 dots

   B. 24 dots

   C. 30 dots

   D. 36 dots

2. Theo types at a rate of 40 words per minute. Theo needs to type a report of p pages and there are approximately w words on each page. Which expression estimates the number of minutes it will take for Theo to complete the report?

   A. $40\ pw$

   B. $\frac{40}{pw}$

   C. $\frac{pw}{40}$

   D. $p\ \frac{40}{w}$

Lesson 35

You may use a calculator to answer these questions. Circle the correct answer. Be prepared to explain how you got your answer.

1. A teacher compiled the number of errors made by her students on a quiz. The results are as follows:

   6, 3, 2, 3, 5, 2, 2, 5, 4, 2, 1, 1

   What is the mean number of errors?

   A. 2.0

   B. 2.5

   C. 3.0

   D. 3.5

2. Jeremy has 12 cards. There are four colors: red, yellow, green, and blue. Each color has cards numbered 1, 2, and 3. If Jeremy selects one card at random, what is the probability that it is either a 2 or a red card?

   A. $\frac{1}{12}$

   B. $\frac{1}{6}$

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

   D. $\frac{7}{12}$

Lesson 36

You may use a calculator to answer these questions. Circle the correct answer. Be prepared to explain how you got your answer.

1. A bicycle wheel is a circle with a diameter of 27 inches. When Julia is riding the bike, the wheel rotates 200 times per minute. At this rate, which is the best estimate of the number of feet Julia will travel in one minute?

   A. 700 feet

   B. 1,400 feet

   C. 2,700 feet

   D. 5,400 feet

2. Teams in the Indoor Professional Football League play on a field that is half as long and half as wide as an outdoor field. What is the ratio of the area of an indoor field to the area of an outdoor field?

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

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

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

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

Lesson 37

You may use a calculator to answer these questions. Circle the correct answer. Be prepared to explain how you got your answer.

1. If 1.094 yards ≈ 1 meter, about how many square yards are in a square meter?

   A. 0.836 square yard

   B. 0.914 square yard

   C. 1.094 square yards

   D. 1.196 square yards

2. One of Mike's jobs at the pet store is to change the water in the fish tanks. He only changes half of the water in a tank at any one time. The hose drains at 1.2 gallons per minute, then it refills at 2.9 gallons per minute. About how long will it take Mike to drain and then refill half of the water in a 50-gallon tank?

   A. $\frac{1}{2}$ hour

   B. 1 hour

   C. $1\frac{3}{4}$ hours

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

Lesson 38

You may use a calculator to answer these questions. Circle the correct answer. Be prepared to explain how you got your answer.

1. A hybrid (gasoline-electric) car can travel between 45 and 68 miles per gallon of gasoline. If gasoline costs \$2 a gallon, what would be the range in gasoline cost, c, for a hybrid car to travel 500 miles?

   A. $\$7.35 \leq c \leq \$11.11$

   B. $\$11.25 \leq c \leq \$17.00$

   C. $\$14.70 \leq c \leq \$22.22$

   D. $\$90.00 \leq c \leq \$136.00$

2. To solve the equation $10(h - 2) + 160 = 290$, there are several possible first steps. Which first step would lead to an incorrect solution for the equation?

   A. Distribute 10, so that $10h - 20 + 160 = 290$.

   B. Divide each term by 10, so that $h - 2 + 16 = 29$.

   C. Subtract 10 from each side of the equation, so that $(h - 2) + 160 = 280$.

   D. Subtract 160 from each side of the equation, so that $10(h - 2) = 130$.

Lesson 39

You may use a calculator to answer these questions. Circle the correct answer. Be prepared to explain how you got your answer.

1. A local hot-sauce factory uses several machines to fill its bottles with hot sauce. Machine A can fill 100 bottles each minute. Machine B can fill 100 bottles in 90 seconds. The manager wants to know the length of time required to fill 100 bottles if the two machines are operating at the same time. Which estimate is the most reasonable?

   A. 15 seconds

   B. 35 seconds

   C. 50 seconds

   D. 60 seconds

2. During its spring sale, The Coat Barn reduced the price of all jackets by 25 percent. During its summer sale, the store further reduced the spring sale price by 20 percent. What percentage of the original price is the summer sale price?

   A. 40 percent

   B. 45 percent

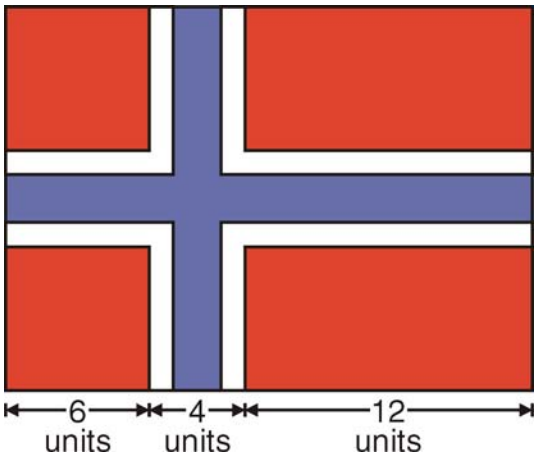
   C. 55 percent

   D. 60 percent

Lesson 40

This question requires you to show your work and explain your reasoning. Your answer should be clear enough so that another person could read it and understand your thinking. It is important that you show <u>all</u> of your work.

1. Curt is making a replica of the Norwegian flag for a social studies project. A diagram of the official flag design is shown below.



The diagram shows the official ratios for the different sections of the flag. Curt wants his flag to be proportional to the official flag. If Curt makes each red <u>square</u> 15 cm long in his flag, what will be the distance between a red square and a red rectangle?

2. Jim calculated that a job will take 1.9 hours. If he starts the job at 12:04 P.M., at what time should it be completed?

3. Kelly and Sam are starting to save money to buy a car. Kelly saves $120 each month, and Sam saves $80 each month. At this rate, after how many months will Kelly have saved exactly $1,000 more than Sam?

Lesson 41

This question requires you to show your work and explain your reasoning. Your answer should be clear enough so that another person could read it and understand your thinking. It is important that you show <u>all</u> of your work.

1. Roger says that raising the score on a high-scoring test paper would raise the class average on the test more than raising the score on a low-scoring paper by the same amount. Is Roger right or wrong? Explain or prove your answer to someone who does not agree with you.

Lesson 42

This question requires you to show your work and explain your reasoning. Your answer should be clear enough so that another person could read it and understand your thinking. It is important that you show <u>all</u> of your work.

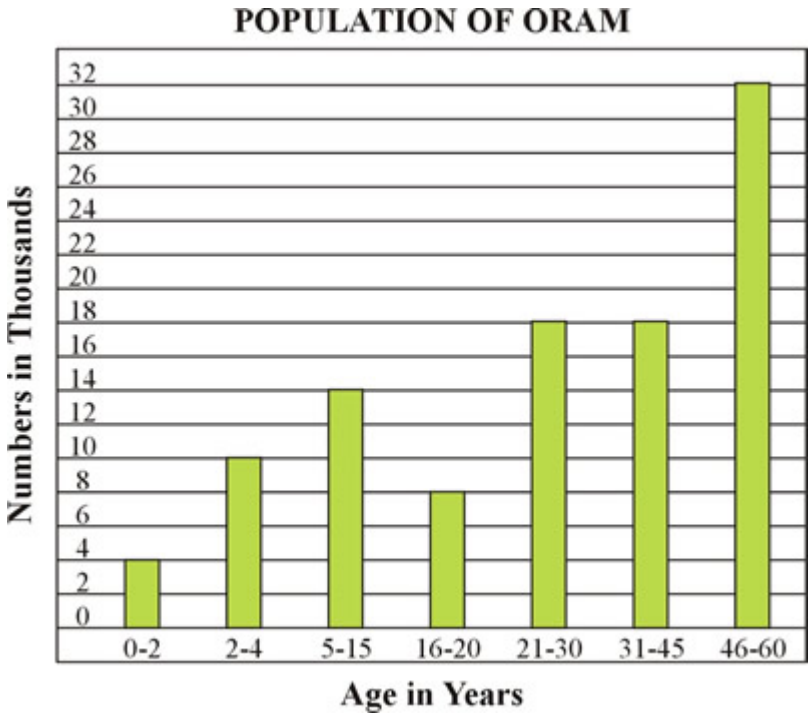
1. Mark is trying to determine the most profitable price to charge for a cup of juice at his juice bar. Over the course of four weeks he tried different prices. The table below shows how well the cups of juice sold at different prices. Mark's expenses are $0.20 per cup. Use this information to determine which price Mark should choose to make the greatest profit. Explain how you arrived at your answer.

	Price	Average Sales Per Day
First Week	$0.25	200 cups
Second Week	$0.35	150 cups
Third Week	$0.60	70 cups
Fourth Week	$0.80	40 cups

Lesson 43

This question requires you to show your work and explain your reasoning. Your answer should be clear enough so that another person could read it and understand your thinking. It is important that you show <u>all</u> of your work.

Use the graph below to answer question 1.



1. Graphs are sometimes made to give misleading information. Sam has made this graph to convince the world that things look bad for Oram. He says there are too few people in the younger age ranges.

   Look carefully at Sam's graph. Discuss what you think is right or wrong about the way he made it. Is Sam's conclusion about young people in Oram valid? Justify your answer.

Lesson 44

This question requires you to show your work and explain your reasoning. Your answer should be clear enough so that another person could read it and understand your thinking. It is important that you show <u>all</u> of your work.

Use the data in the box below to answer question 1.

Ages of Students in the 5th-Period Algebra II Class
18, 17, 17, 15, 16, 16, 16, 17, 17, 18, 17, 17, 16, 16, 17, 18, 18, 17, 16, 16

1. If the 42-year-old teacher's age were included in the set of data, explain the effect on the mean, median, and mode.

Lesson 45

This question requires you to show your work and explain your reasoning. Your answer should be clear enough so that another person could read it and understand your thinking. It is important that you show <u>all</u> of your work.

1. You are concerned about the automatic heating control on your furnace. Your goal is to maintain a 70°F indoor temperature on a day when the outdoor temperature is around freezing. You have observed that the temperature near the thermostat drops to 65°F before it turns on the furnace and reaches 75°F before it turns off the furnace. You also know that the house heats or cools at the rate of 2°F per minute.

   Realizing that you cannot have the temperature constant at 70°F, you are willing to accept a variation of 2° below and above your 70°F goal. What percent of the time, in one complete cycle, will the temperature fall within the acceptable range?

Lesson 46

This question requires you to show your work and explain your reasoning. Your answer should be clear enough so that another person could read it and understand your thinking. It is important that you show <u>all</u> of your work.

1. Environmental Engineers, Inc., is hired to clean up an oil spill in the Portland Harbor. Each day, 15% of the remaining oil will be removed from the harbor. The Environmental Protection Agency requires that 90% of the oil be removed to limit the damage to the marine habitat.

   A. What percent of the spill will remain after the first clean-up day?

   B. What percent of the original spill will remain after two days of the cleanup?

   C. During which day will the spill be reduced to EPA requirements? Explain how you found your answer.