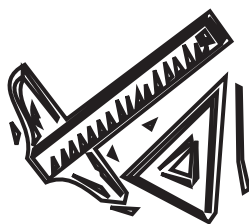Grade **8**

New York State Testing Program

Mathematics

Book 1

May 10 and 11, 2005

1 What is the missing number in the pattern below?

| 2 | 6 | 18 | 54 | ? | 486 |

A 72

B 90

C 108

D 162

2 What is the value of $2^3 + 2^4$?

F 14

G 24

H 28

J 128

3 A spinner is divided into 6 equal sections numbered from 1 to 6. If the arrow is spun once, what is the probability that it will land on a section numbered 4 or 5?

A $\frac{1}{6}$

B $\frac{2}{6}$

C $\frac{4}{6}$

D $\frac{5}{6}$

4 Travis is three times as old as Anne. Mary is three years older than Travis. If Mary is 39 years old, how old is Anne?

F 12 years old

G 13 years old

H 14 years old

J 16 years old

5 The human heart beats an average of 37,800,000 times in one year. What value of x will make 3.78×10^x have the same value as 37,800,000 ?

A -5

B -7

C 5

D 7

6 Tina is making a scale model of a monument that is 155 feet tall. She uses a scale of 1 inch = 5 feet. How tall should Tina make her model?

F 5 inches

G 8 inches

H 13 inches

J 31 inches

7 At the grocery store, Jerry spent $24.75 for 3 pounds of chicken and 3 pounds of cheese. The cheese cost $4.50 per pound. What was the cost of the chicken per pound?

   A $2.75

   B $3.75

   C $5.75

   D $6.75

8 Four students are reading the same book. The table below shows the portion that each student has read.

READING RECORD

Student	Portion Read
Frankie	$\frac{7}{10}$
Jacqueline	$\frac{2}{3}$
Pierre	$\frac{5}{8}$
Yolanda	$\frac{3}{4}$

Which student has read the largest portion of the book?

   F Frankie

   G Jacqueline

   H Pierre

   J Yolanda

Go On

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Session 1: Part 1

Page 3

9 Which unit of measurement would be most appropriate for measuring the area of a page of newspaper?

    A   square millimeters

    B   square centimeters

    C   square meters

    D   square kilometers

10 What is the value of the expression $7 + 5 \times (\text{-}3) - (6 - 2) \div 2$?

    F   -10

    G   -16

    H   -20

    J   -38

11 Which information is *not* needed to calculate the volume of a cylindrical can?

    A   value of π

    B   height of the can

    C   weight of the can
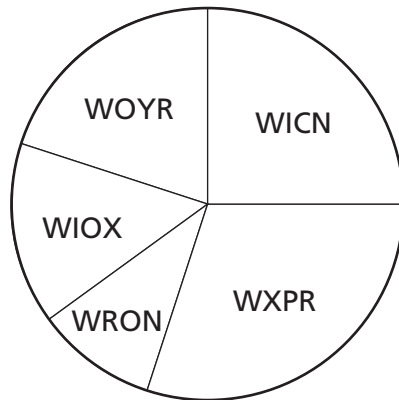
    D   radius of the base of the can

12 What is the value of *n* in the equation below?

$$2n - 5 = 23$$

    F   9

    G   14

    H   26

    J   28

13 The circle graph below shows the favorite radio stations of the students in Julie's school.

RADIO STATION SURVEY

Julie's teacher asks her to estimate what percent of the students chose WXPR. Which best represents the percent of students who chose WXPR?

A 10%

B 25%

C 30%

D 45%

14 As students entered a concert, a key chain was given to every second student in line. T-shirts were given to every third student in line. Which student in line was the first to receive both a key chain and a T-shirt?

F 5th

G 6th

H 8th

J 9th

Go On

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Session 1: Part 1

Page 5

15 Resa gives the clerk a twenty-dollar bill to pay for the oranges shown in the diagram below. The cost of the oranges is $1.89 per pound.
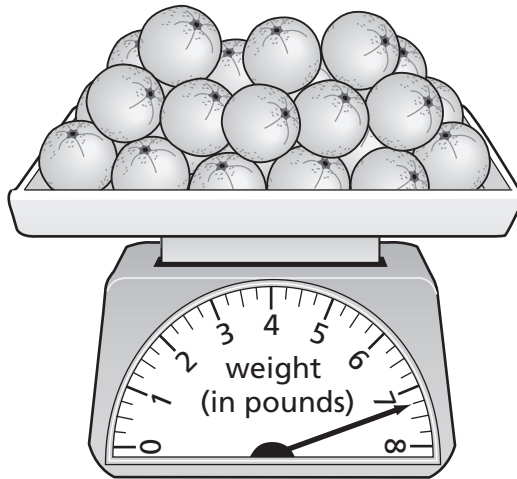
About how much money will Resa receive in change?

A under 5 dollars

B between 5 and 7 dollars

C between 7 and 9 dollars

D over 9 dollars

16 Josh went to the carnival with $12.24. It cost him $5.00 for admission and $0.75 for each ride. Josh bought one drink for $1.25, and he rode as many rides as he could afford. If Josh did not buy anything else, how much money did he have when he left the carnival?

F $0.01

G $0.24

H $0.49

J $0.74

17 If $x = -24$ and $y = 6$, what is the value of the expression $|x + y|$?

    A   18

    B   30

    C   -18

    D   -30

18 The video store rents movies for $3.50 the first day. There is a $2.00 charge for each additional day, *d*. Which expression represents this relationship?

    F $\$3.50 + \$2.00d$

    G $\$3.50d + \$2.00$

    H $\$3.50 - \$2.00d$

    J $\$3.50d - \$2.00$

19 The points John scored in his first 12 basketball games are shown in increasing order below.

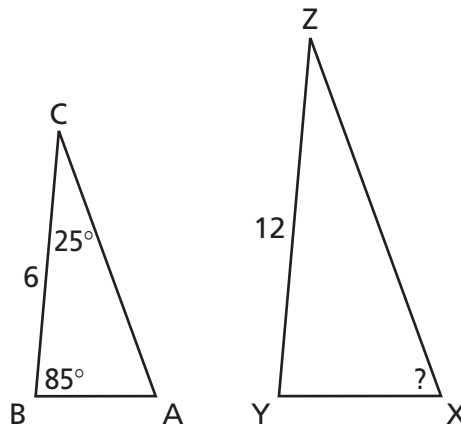<div align="center">5, 7, 10, 14, 16, 16, 20, 20, 20, 21, 21, 22</div>

John scores 29 points in the next game. Which statement is true of the median of his points for the 13 games compared to the median of his points for the first 12 games?

    A   The median will stay the same.

    B   The median will increase by one.

    C   The median will increase by two.

    D   The median will increase by four.

Go On

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Session 1: Part 1

Page 7

20   Triangle ABC is similar to triangle XYZ.

What is the measure of angle X?

F   70°

G   85°

H   110°

J   140°

21   Sam typed 420 words in 10 minutes. If he continues to type at this rate, how many words will he have typed in 3 hours?

A   756

B   1,260

C   2,520

D   7,560

Session 1: Part 1

22 Use your ruler to help you solve this problem.

The line segment below represents the width of a rectangle Mike is drawing. He wants the length to be 3 times the width.

What will be the length of the rectangle in centimeters?

F   4.5

G   7.5

H   9.0

J   13.5

23 Sandy earns $8.00 an hour working as a lifeguard. She used the formula $E = 8h$ to calculate her earnings.

• E = earnings
• h = hours worked

When h is doubled, what happens to E?

A E is eight times as much.

B E is twice as much.

C E is half as much.

D E stays the same.

Go On

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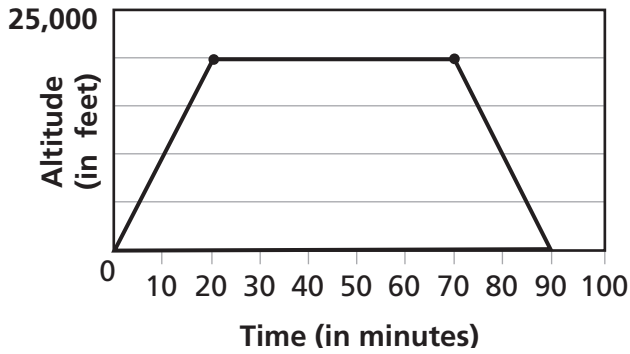
Session 1: Part 1

Page 9

24 Enrique is taking a plane trip. The plane will take off and ascend for about 20 minutes, maintain a constant altitude for about 50 minutes, and then descend for about 20 minutes before landing. Which graph shows Enrique's trip?
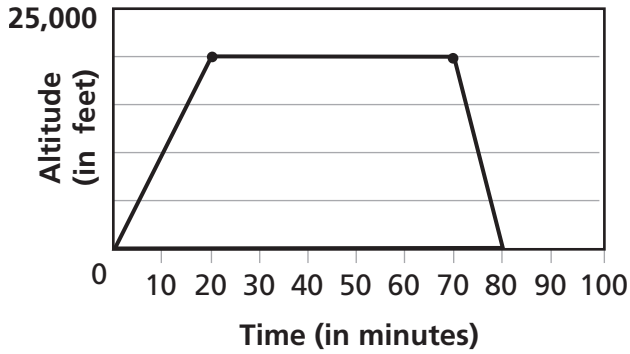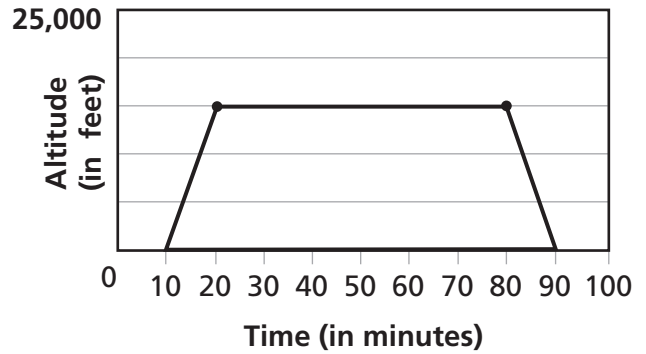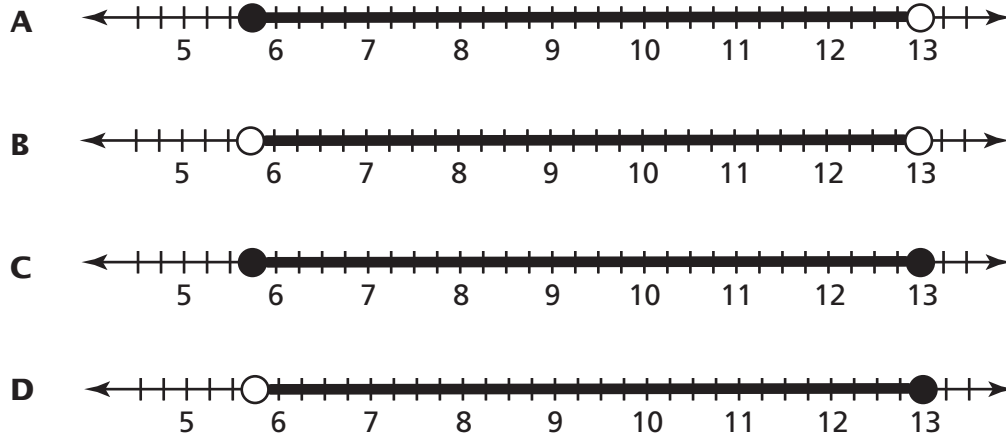

F
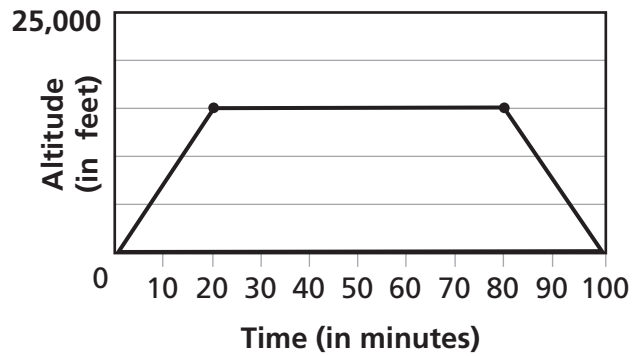
H

G

J

25 Pat said that the amount of money he has in his pocket is greater than or equal to $5.75 but less than $13.00. Which number line shows the amount of money Pat might have?

A

B

C

D

26 Silvia hiked a 30-mile trail in 3 days. The first day, she hiked 50% of the total distance. The second day, she hiked 25% of the distance that *remained*. How many miles did she hike the third day?

F $3\frac{3}{4}$

G $7\frac{1}{2}$

H $11\frac{1}{4}$

J $22\frac{1}{2}$

Go On

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Session 1: Part 1

Page 11

27 In the diagram below, $\overrightarrow{PF} \perp \overleftrightarrow{HD}$.
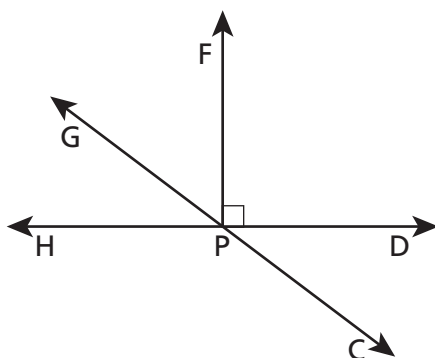
Which angles are complementary?

A ∠GPH and ∠DPC

B ∠GPF and ∠GPH

C ∠GPD and ∠DPC

D ∠GPF and ∠FPC

STOP

28   Alicia wears a blouse, a skirt, and a belt each day to school. She has 3 blouses, 3 skirts, and 2 belts. How many different outfits can Alicia create?

Show your work.

Answer _____ outfits

Go On

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Session 1: Part 2

Page 1

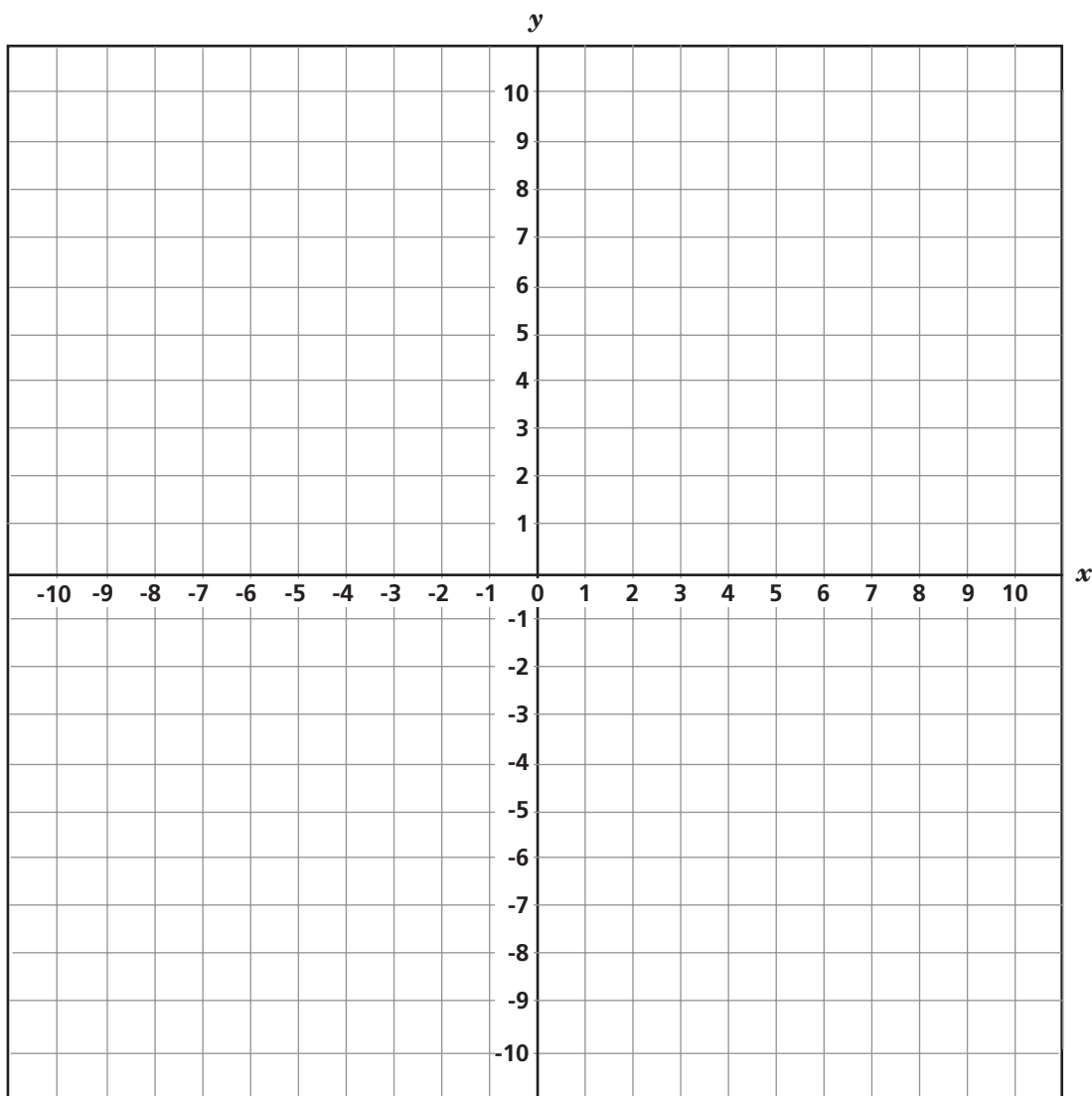**29** On the grid below, sketch and label the geometric shapes A and B using the coordinates of the vertices given for each.

Shape A: (-5, 2), (-2, 2), (-5, 5), (-2, 5)
Shape B: (-1, -2), (-6, -2), (-7, -5), (-2, -5)

What is the area of each shape in square units?

Area of Shape A _____ square units

Area of Shape B _____ square units

Session 1: Part 2

30 Tyler wants a pair of shoes that sells for $60.00. He uses two coupons when he buys these shoes. One coupon is for a 30% discount and the other coupon is for $10.00 off. The cashier takes the 30% discount first, and then subtracts $10.00.

30% DISCOUNT	$10.00 DISCOUNT
Coupon 1	**Coupon 2**

Part A

How much does Tyler pay for the pair of shoes?

Show your work.

Answer $ _____

Part B

Would the price be different if the cashier had subtracted the $10.00 and then taken the 30% discount? On the lines below, show your work or explain in words.

_____

_____

_____

_____

Go On

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Session 1: Part 2

Page 3

31 When Jimmy and Shane went fishing, Shane caught 2 more than three times the number of fish that Jimmy caught. Write an algebraic expression that represents how many fish Shane caught.

Expression _____

Use the expression you wrote above to determine how many fish Shane caught if Jimmy caught 2 fish.

Answer _____ fish

Harry received 82 points after tossing 14 darts at the target shown below. At least one dart landed in each section. All 14 darts landed in sections on the target.
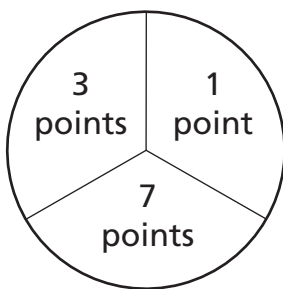
What is the *least* number of times Harry could have hit the 1-point area?

Answer _____ time(s)

On the lines below, explain how you found your answer.

_____

_____

_____

_____

_____

_____

Go On

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Session 1: Part 2

Page 5

33   In the space below, use prime factorization to find the least common multiple of 120 and 252.

Show your work.

Least common multiple _____

STOP

Session 1: Part 2

Do NOT turn this page until you are told to do so.

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Page 7

34 The figure below shows a diagram of Veronica's garden.
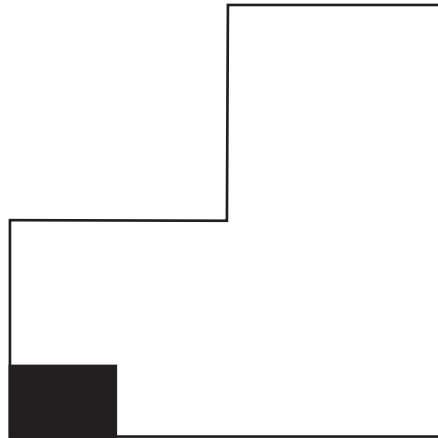
The shaded area of the garden represents a patch of carrots. Veronica estimates that she will get about 40 carrots from the patch shown above. Veronica is going to plant the rest of her garden with carrots.

Part A

ESTIMATE the total number of carrots she can expect to grow.

Estimate _____ carrots

Part B

On the lines below, describe the process you used to determine your estimate.

_____

_____

_____

_____

Go On

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Session 2

Page 9

35 At the supermarket, Shari and Ethel are setting up displays of cans using different patterns.

Part A

Complete the tables below to show the number of cans Shari's display and Ethel's display will have in each row.

SHARI'S DISPLAY

Row	Cans
1	1
2	4
3	9
4	16
5	
6	
7	

ETHEL'S DISPLAY

Row	Cans
1	1
2	3
3	5
4	7
5	
6	
7	

Part B

On the lines below, use words to describe the pattern of each display.

Shari's pattern _____

_____

_____

_____

Ethel's pattern _____

_____

_____

_____

Session 2

36

Part A

Using the associative property, write an expression equivalent to $(16 + 3x) + x$.

Expression _____

Part B

What is the value of $(16 + 3x) + x$, when $x = -8$?
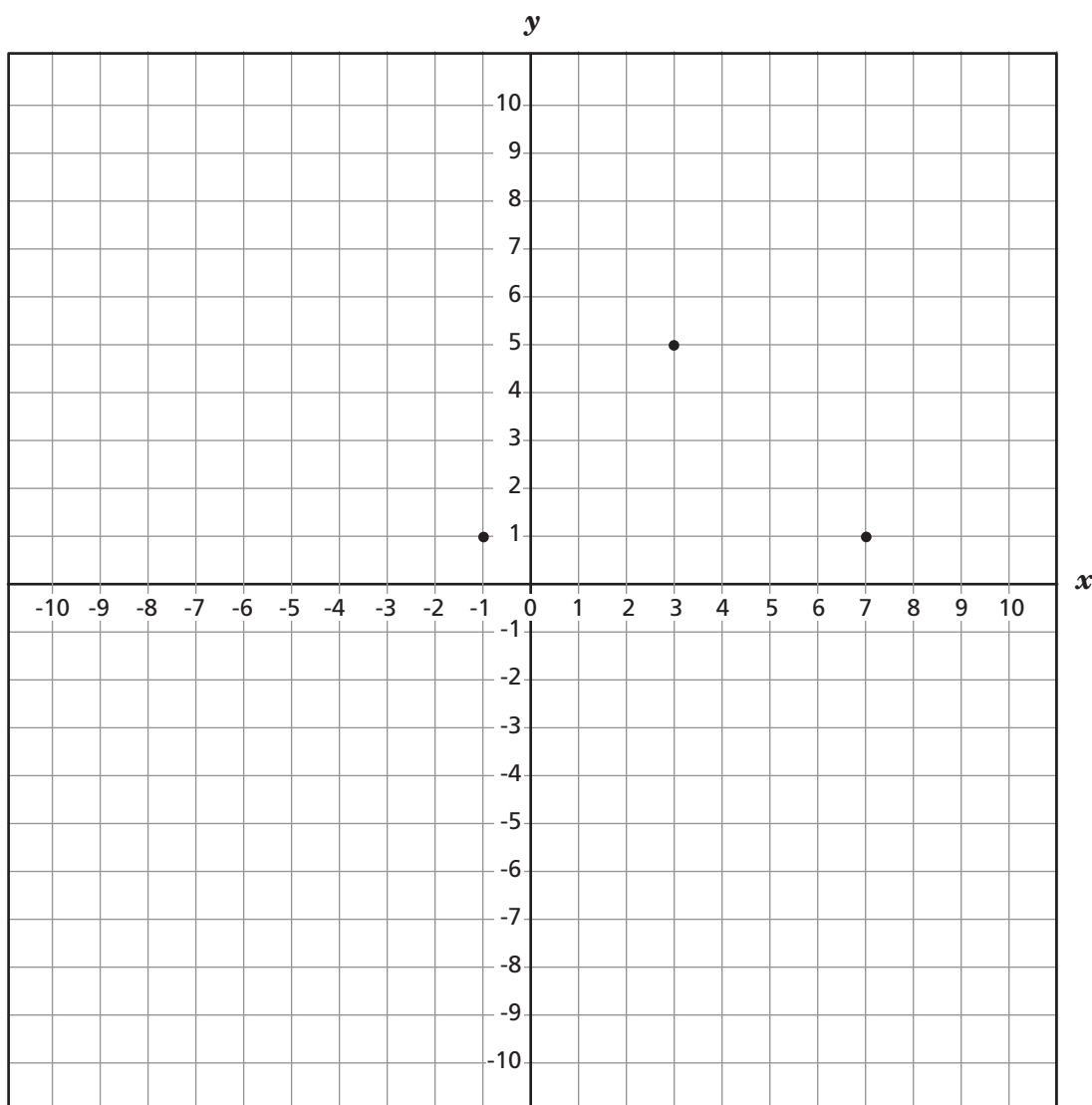
Show your work.

Answer _____

Go On

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Session 2

Page 11

37   On the grid below, three of the four vertices of a square have been plotted.

Part A

Plot the fourth vertex on the grid and connect the vertices to complete the square.

Part B

What are the coordinates of the fourth vertex of the square?

Answer (_____ , _____)

Part C

What is the length, in units, of the diagonal of the square?

Answer _____ units

Session 2

38   Mark made a skateboard ramp shaped like a triangle. It is 4.5 feet long and 3 feet high. He wants to make another ramp that is shaped like a triangle similar to the first ramp. The new ramp will be 4 feet high.

Write a proportion that Mark can use to find the length, *x*, of the new ramp.

Proportion _____

What is the length, in feet, of the new ramp?

Show your work.

Answer _____ feet

Go On

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Session 2

Page 13

39

Part A

In Randi's school, 5 out of every 7 students ride the bus to school. What percent of students ride the bus? Round your answer to the nearest tenth.

Show your work.

Answer _____ %

Part B

If there are 350 students in Randi's school, approximately how many students ride the bus?

Show your work.

Answer _____ students

40   Darnell wants to buy ready-mix concrete for his patio. The concrete will fill a space that is 54 feet by 16 feet by 6 inches.

Part A

How many cubic yards of ready-mix concrete will Darnell need?

1 cubic yard = 27 cubic feet

Show your work.

Answer _____ cubic yards

Part B

Ready-mix concrete costs $75.00 per cubic yard. How much will the ready-mix concrete cost for Darnell's patio?

Show your work.

Answer $_____

Go On

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Session 2

Page 15

41 Write the next three numbers in the sequence below.

2, -8, 32, -128, _____, _____, _____

On the lines below, describe the pattern you used to complete the sequence.
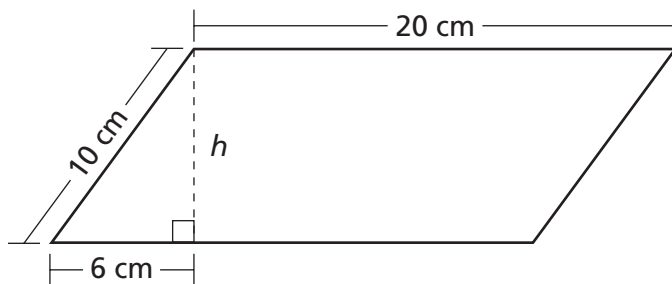
_____

_____

_____

42 Becky is buying a new car at a cost of $23,685. She will pay for it over a 60-month period. How much less will Becky pay per month if she makes a down payment of $3,000 first?

Show your work.

Answer $ _____

Session 2

43 The parallelogram shown below has sides with lengths of 10 centimeters and
20 centimeters.

20 cm

10 cm

h

6 cm

Part A

Calculate the height, in centimeters, of the parallelogram.

Show your work.

Answer _____ cm

Part B

Calculate the area, in square centimeters, of the parallelogram.

Show your work.

Answer _____ cm²

Go On

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Session 2

Page 17

44 Amid's bill at a restaurant was $39.24. He plans to leave a 15% tip for the waiter. On the lines below, explain how Amid can ESTIMATE the amount for the tip.

45 The diagram below shows a truck with a ramp that is used to load and unload furniture from the truck. The ramp measures 9 meters in length, and when the ramp is extended from the truck to the ground, it meets the ground at a 10° angle.

Coast
to
Coast

Moving Van

MOVING

9 m

Ramp

?

10°
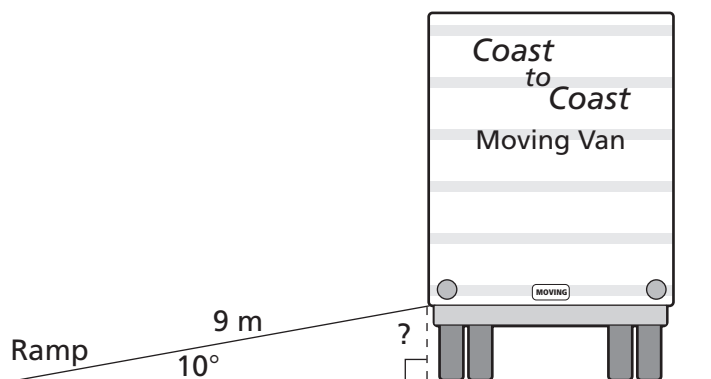
(NOTE: Not to scale)

How many meters off the ground is the end of the ramp where it attaches to the truck?

Show your work.

Answer _____ meters

STOP