New York State Testing Program

Mathematics Test
Book 2

Grade **7**

May 5–7, 2010

Name _____

TIPS FOR TAKING THE TEST

Here are some suggestions to help you do your best:

- Be sure to read carefully all the directions in the test book.
- Read each question carefully and think about the answer before writing your response.
- Be sure to show your work when asked. You may receive partial credit if you have shown your work.
- Use your calculator to help you solve the problems on this part of the test.
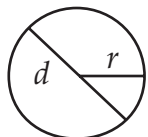
This picture means that you will use your ruler.

This picture means that you will use your protractor.

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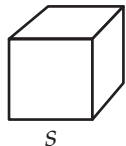**Page 1**

Mathematics Reference Sheet

FORMULAS

Circle
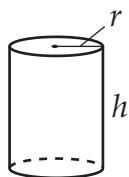
$$\text{Area} = \pi r^2$$

$$\text{Circumference} = 2\pi r$$
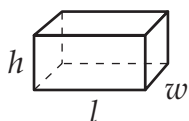
Cube

$$\text{Total Surface Area} = 6s^2$$

$$\text{Volume} = s^3$$

Right Circular Cylinder

$$\text{Total Surface Area} = 2\pi rh + 2\pi r^2$$

$$\text{Volume} = \pi r^2 h$$

Right Rectangular Prism

$$\text{Total Surface Area} = 2wl + 2lh + 2wh$$

$$\text{Volume} = lwh$$
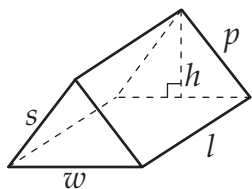
Right Triangular Prism

$$\text{Total Surface Area} = wh + lw + lp + ls$$

$$\text{Volume} = \frac{1}{2}wh \times l$$
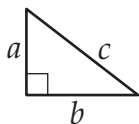
Pythagorean Theorem

$$c^2 = a^2 + b^2$$

CONVERSIONS

1 centimeter = 10 millimeters

1 meter = 100 centimeters = 1,000 millimeters

1 kilometer = 1,000 meters

1 gram = 1,000 milligrams

1 kilogram = 1,000 grams

1 pound = 16 ounces

1 ton = 2,000 pounds

1 cup = 8 fluid ounces

1 pint = 2 cups

1 quart = 2 pints

1 gallon = 4 quarts

1 liter = 1,000 milliliters

1 kiloliter = 1,000 liters

31 To raise money for charity, Polly climbs the 1,776 steps in the CN Tower in Toronto, Canada. If it takes her 40 minutes to complete the climb, what is Polly's average rate in steps per minute?

$$\text{Rate} = \frac{\text{Distance}}{\text{Time}}$$

Show your work.

Answer _____ steps per minute

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32 Is the figure below a right triangle? On the lines below, explain how you determined your answer.

```
        7  /\  6
          /  \
         /    \
        /_____\
           10
```

[not drawn to scale]

_____

_____

_____

_____

_____

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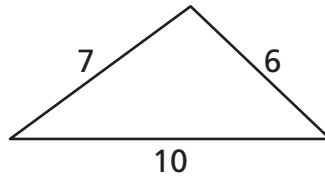
33 For the lunch special at Nick's Deli, customers can create their own sandwich by selecting 1 type of bread and 1 type of meat from the selection below.

SANDWICH CHOICES

Type of Bread	Type of Meat
White	Chicken
Rye	Roast Beef

In the space below, list all the possible sandwich combinations using 1 type of bread and 1 type of meat.

If Nick decides to add whole wheat bread as another bread option, how many possible sandwich combinations will there be?

Answer _____ sandwich combinations

Go On

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34 Use your protractor to help you solve this problem.

Sara is sharing apples from her apple tree with her friends. She wants to create a circle graph to show the amount of apples given to each friend. The table below shows the percent of apples each friend receives and the angle measure for each sector of the circle graph.

Friend	Percent of Apples	Angle Measure (in degrees)
Lori	5%	18°
Donovan	35%	126°
Melinda	20%	72°
Avery	40%	144°

Complete the circle graph below to show the data in the table.

Be sure to

• graph all the data
• label each sector

SARA'S APPLES

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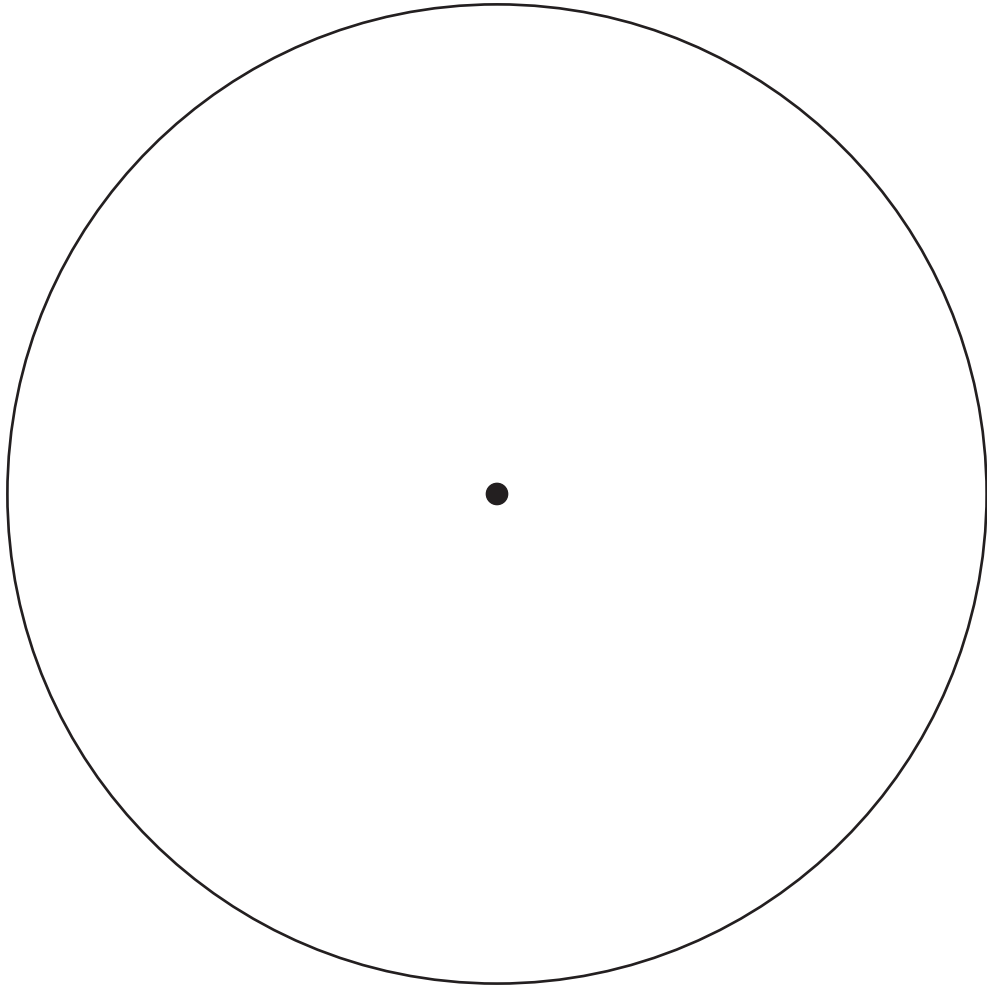
35 Melissa conducts a study of the heights of some red kangaroos. She records the heights in the table below.

Red Kangaroo Heights (inches)
40 57 72 78 62 67 73 66 71 60 56 52 48 51 44 79

Using the data in Melissa's table, complete the frequency table below to show the number of kangaroos in each of the indicated height ranges.

RED KANGAROO HEIGHTS

Height (inches)	Number of Kangaroos
40–49	
50–59	
60–69	
70–79	

Based on her study, Melissa claims that exactly $\frac{1}{4}$ of the red kangaroos are between 70 and 79 inches in height. On the lines below, explain whether her claim is correct.

_____

_____

_____

_____

_____

36 Jerry plans to build a deck that is 189 square feet. What is the prime factorization of 189? Write your answer in exponential form.

Show your work.

Answer _____

Jerry wants his deck to be more than 6 feet wide. Using your result from above, write two possible sets of dimensions for Jerry's deck.

Answer 1. _____ feet by _____ feet

2. _____ feet by _____ feet

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37 The city is building a new 1,815-meter long bicycle trail through the park. Two construction companies have submitted the proposals below for how many days it will take them to complete the job.

<table>
<tr><td>

ARCUS CONSTRUCTION

Length of Trail: 1,815 meters
Number of meters they will build per day: 48

Number of days to complete the job:

$$1{,}815 \div 48 = \underline{\textbf{37.8}}$$

</td><td>

JENNINGS CONSTRUCTION

Length of Trail: 1,815 meters
Number of meters they will build per day: 96

Number of days to complete the job:

$$1{,}815 \div 96 = \underline{\textbf{189.1}}$$

</td></tr>
</table>

One of the construction companies has made an error in calculation. Use **estimation** to find the number of days it will take each construction company to finish the job.

Show your work.

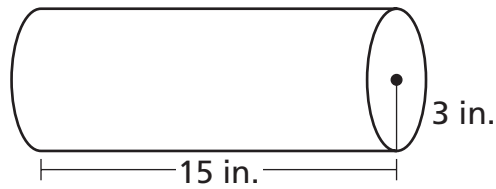***Estimation for Arcus Construction*** _____ days

Estimation for Jennings Construction _____ days

Based on your estimations, explain the error in calculation one of the companies made. Be sure to name the company.

_____

_____

_____

_____

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Page 11

38 The diagram below shows a pillow Chris wants to cover with fabric.

[not drawn to scale]

What is the **total** surface area of the pillow? Round your answer to the nearest hundredth.

Show your work.

Answer _____ square inches

If Chris shortens the length of the pillow from 15 inches to 12 inches, how much **less** fabric will she need? Round your answer to the nearest hundredth.

Show your work.

Answer _____ square inches

STOP

Place Student Label Here

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