

# 7th Grade Mathematics

This Test Review Booklet was designed for Grade 7 Mathematics Assessment Test. It provides examples of the format and types of questions that may be on the actual test as administered by the State Education Department. We have separated our review tests into two sections:

Part 1 -Multiple Choice Section

Part 2 -Short / Extended Response Section

The actual test has three books, administered over three days.

Book 1: 26 multiple choice questions

Book 2: 25 multiple choice questions

Book 3: 10 short or extended response questions

Each section should take approximately 60 minutes.

Each student should have the following items made available to them during the test:

- Ruler
- Protractor
- Calculator
- Mathematics Reference Sheet

Students must be able to use a scientific calculator. These calculators must include normal arithmetic operations, decimal, change sign, parentheses, square root and Pi functions. Graphing calculators or those with problem solving, programming, place value or inequality solution facilities are not allowed.

For a complete description of restrictions involving calculator usage, see the NY State Education website: [www.nysed.gov](http://www.nysed.gov)

## Question Distribution

The questions in the practice exams have the same approximate distribution as that described by the NYSED Elementary, Middle, Secondary, and Continuing Education guidelines. They are:

Ratios and Proportional Relationships	20-30%
The Number System	15-25%
Expressions and Equations	30-40%
Geometry	5-15%
Probability and Statistics	10-20%

## Special Thanks To:

Luke Masouras - Examgen Inc.

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## Grade 7 Mathematics Reference Sheet

### CONVERSIONS

1 inch = 2.54 centimeters

1 meter = 39.37 inches

1 mile = 5,280 feet

1 mile = 1,760 yards

1 mile = 1.609 kilometers

1 kilometer = 0.62 mile

1 pound = 16 ounces

1 pound = 0.454 kilogram

1 kilogram = 2.2 pounds

1 ton = 2,000 pounds

1 cup = 8 fluid ounces

1 pint = 2 cups

1 quart = 2 pints

1 gallon = 4 quarts

1 gallon = 3.785 liters

1 liter = 0.264 gallon

1 liter = 1,000 cubic centimeters

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### FORMULAS

Triangle

$$A = \frac{1}{2}bh$$

Parallelogram

$$A = bh$$

Circle

$$A = \pi r^2$$

Circle

$$C = \pi d \text{ or } C = 2\pi r$$

General Prisms

$$V = Bh$$

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# 7th Grade Mathematics

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# TEST 1

## PART 1

- 1 Write "\$33,000 earned in 1 year" as a unit rate in months.

A \$2,570/month  
B \$1,300/month  
C \$5,500/month  
D \$2,750/month

1 \_\_\_\_\_

- 2 What is "78 radishes planted in a 13-foot long row" written as a unit rate per inch?

A 72 radishes/inch  
B 0.5 radish/inch  
C 6 radishes/inch  
D 2 radishes/inch

2 \_\_\_\_\_

- 3 What is "1,017 square feet of lawn mowed in 9 minutes" written as a unit rate per hour?

A 6,780 square feet mowed/hour  
B 113 square feet mowed/hour  
C 61,020 square feet mowed/hour  
D 753 square feet mowed/hour

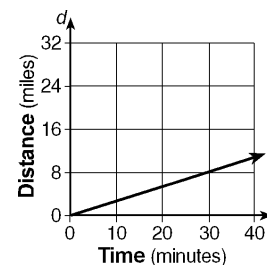
3 \_\_\_\_\_

- 4 Write "\$157.50 earned in 15 hours" as a unit rate per 40-hour workweek.

A \$945/week  
B \$10.50/week  
C \$420/week  
D \$600/week

4 \_\_\_\_\_

- 5 The graph shows below the distance Marissa travels on her bike during a forty-minute period.



What is the approximate unit rate of Marissa's biking speed?

A  $3\frac{3}{4}$  mi/min  
B 240 mi/min  
C  $\frac{1}{4}$  mi/min  
D  $\frac{1}{2}$  mi/min

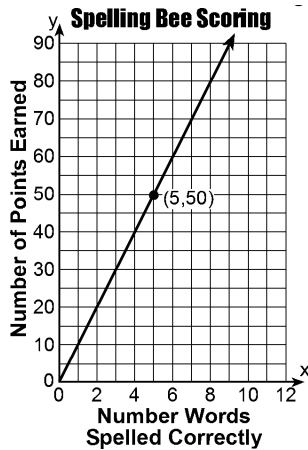
5 \_\_\_\_\_

- 6 The number of pieces of mail processed by a machine in the post office is directly proportional to the number of minutes that the machine runs. The machine processes 2,700 pieces of mail in 60 minutes of continuous running. What is the speed of this machine expressed as a unit rate?

A 45 pieces/minute  
 B 45 pieces  
 C 45 pieces/hour  
 D 45 pieces/second

6 \_\_\_\_\_

- 7 Which one of the following ratios has the same unit rate as the line graphed below?



A  $\frac{55}{15}$   
 B  $\frac{40}{4}$   
 C  $\frac{8}{85}$   
 D  $\frac{7}{70}$

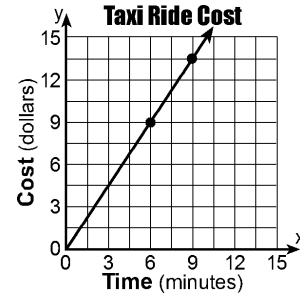
7 \_\_\_\_\_

- 8 A state income tax is 9% of any amount earned over \$15,000. What state income tax does a person earning \$24,500 pay?

A \$1,350  
 B \$855  
 C \$2,205  
 D \$650

8 \_\_\_\_\_

- 9 Amity and Beth are traveling in a taxi. The graph below shows a proportional relationship between the time they rode in the taxi and the cost of the taxi ride. Which expression can be used to find the unit rate in dollars?



A  $3 + 4.5$   
 B  $\frac{9}{6}$   
 C  $\frac{6}{9}$   
 D  $\frac{0}{0}$

9 \_\_\_\_\_

- 10 A person gets a \$2,000 home improvement loan from a bank for six months at an annual interest rate of 12%. What is the simple interest due on the loan?

A \$140  
 B \$210  
 C \$120  
 D \$240

10 \_\_\_\_\_

- 11 Approximately how long will it take \$200 to double to \$400 when the annual interest rate is  $8\frac{1}{2}\%$ ?

A 6.25 years  
 B 11.75 years  
 C 1.75 years  
 D 8.5 years

11 \_\_\_\_\_

- 12** Mark bought an MP3 player for \$275. If the sales tax is 8.25%, what was the total cost of the MP3 player?

A \$283.25  
B \$266.75  
C \$297.69  
D \$252.31

12 \_\_\_\_\_

- 13** The bill for a meal at a restaurant is \$105.95. If the customer leaves a 20% tip, what is the total cost of the meal, with tip?

A \$127.14  
B \$21.19  
C \$115.93  
D \$145.00

13 \_\_\_\_\_

- 14** If the check at a restaurant totals \$115.99 and the customer leaves a 15% tip, what is the total cost of the meal?

A \$133.39  
B \$123.39  
C \$17.40  
D \$143.39

14 \_\_\_\_\_

- 15** Add:  $+18 + (-25)$

A +7  
B +43  
C -43  
D -7

15 \_\_\_\_\_

- 16** Add:  $-42.67 + (+19.4) + (-1.2)$

A 24.87  
B 24.47  
C -22.07  
D -24.47

16 \_\_\_\_\_

- 17** Add:  $+3\frac{1}{4} + (-2\frac{1}{2})$

A  $-1\frac{1}{4}$   
B  $5\frac{3}{4}$   
C  $\frac{3}{4}$   
D  $-\frac{3}{4}$

17 \_\_\_\_\_

- 18** What number makes the subtraction sentence  $\square - -8.73 = 22.09$  true?

A 13.36  
B 30.82  
C -30.82  
D -13.36

18 \_\_\_\_\_

19  $(-3\frac{1}{2}) - (-8\frac{2}{3}) =$

- A  $-12\frac{1}{6}$
- B  $-5\frac{1}{6}$
- C  $5\frac{1}{6}$
- D  $12\frac{1}{6}$

19 \_\_\_\_\_

20 Which decimal is equal to  $\frac{1}{8}$ ?

- A 3.6
- B 0.125
- C 8.0
- D 0.36

20 \_\_\_\_\_

21 Which decimal is equal to  $\frac{7}{20}$ ?

- A 0.35
- B 9.0
- C 2.86
- D 0.9

21 \_\_\_\_\_

22 Which decimal is equal to  $\frac{6}{25}$ ?

- A 8.5
- B 0.24
- C 0.85
- D 4.167

22 \_\_\_\_\_

23 Claude lives  $1\frac{4}{5}$  miles from school. If he jogs  $\frac{1}{2}$  this distance every day, how far does he jog daily?

- A  $\frac{2}{5}$  mile
- B  $1\frac{2}{5}$  mile
- C  $\frac{4}{5}$  mile
- D  $\frac{9}{10}$  mile

23 \_\_\_\_\_

24 Three girls want to share  $5\frac{1}{4}$  pounds of taffy equally. How much taffy should each girl get?

- A  $1\frac{1}{3}$  pounds
- B  $2\frac{1}{3}$  pounds
- C  $1\frac{5}{8}$  pounds
- D  $1\frac{3}{4}$  pounds

24 \_\_\_\_\_

25 A car used  $12\frac{3}{10}$  gallons of gasoline on a 369-mile trip. How many miles did this car travel on one gallon of gasoline?

- A 24
- B 26
- C 28
- D 30

25 \_\_\_\_\_



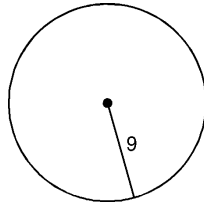
Questions 50 and 51 refer to the following:

Given the formulas for the circumference and area of a circle below.

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

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

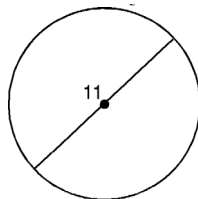
- 50 What is the circumference of the circle pictured below?



- A  $18\pi$
- B  $8\pi$
- C  $81\pi$
- D  $36\pi$

50 \_\_\_\_\_

- 51 What is the circumference of the circle pictured below? [Use  $\pi = 3.14$ .]



- A 37.68
- B 34.54
- C 31.40
- D 36.11

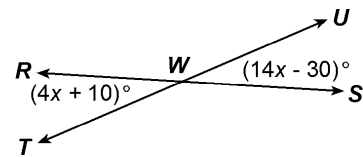
51 \_\_\_\_\_

- 52 If the measures of two complementary angles are in the ratio 1:5, the measure of the larger angle is

- A  $144^\circ$
- B  $150^\circ$
- C  $72^\circ$
- D  $75^\circ$

52 \_\_\_\_\_

- 53 In the accompanying diagram, line  $\overleftrightarrow{RS}$  and line  $\overleftrightarrow{TU}$  intersect at point  $W$ .



If  $m\angle RWT = (4x + 10)^\circ$  and  $m\angle UWS = (14x - 30)^\circ$ , what is the value of  $x$ ?

- A 2
- B 8
- C 4
- D 2.5

53 \_\_\_\_\_

- 54 The Meyers family decided to cover their outdoor deck with Astroturf. The deck is in the shape of a rectangle with dimensions of 24 feet by 16 feet. The Astroturf to be used costs \$3.20 per square foot. What will it cost to cover the deck?

- A \$614.40
- B \$256.00
- C \$1,344.00
- D \$1,228.80

54 \_\_\_\_\_

- 55 If a certain mixture costs \$1.85 per cubic foot, what would it cost to fill a rectangular container measuring 36 ft by 12 ft by 2 ft with that mixture?

- A \$92.50
- B \$1,598.40
- C \$799.20
- D \$864.00

55 \_\_\_\_\_

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## PART 2

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- 56** How many gallons of water (to the nearest tenth) will fill an aquarium that is 10.5 in. wide, 27 in. long, and 13.5 in. high? [1 gallon = 231 in<sup>3</sup>. ] [Round to the nearest tenth.]

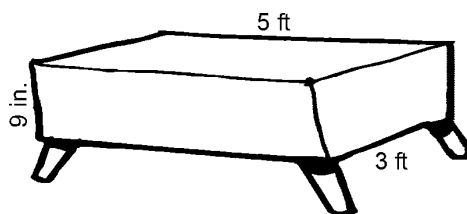
*Show your work:*

*Answer:* \_\_\_\_\_

- 57** Carly is wrapping a present for her friend's birthday. She could only find wrapping paper that is 25 inches wide by 38 inches long. Does she has enough paper to wrap a box measuring 9 inches by 16 inches by 10 inches.

*Show your work and explain your answer on the lines below:*

- 58 Zoe is recovering her couch ottoman with the dimensions in both inches and feet shown below.



How many square feet of fabric does she need to purchase to cover the 5 sides, including an extra 2 inches on each bottom edge to fold underneath and staple to the wood base?

*Show your work:*

*Answer:* \_\_\_\_\_ ft<sup>2</sup>

- 59 A carbonated beverage company needs to report the mean ages of their employees in two different departments and compare them. The data are listed in the table.

Compare the mean ages of the two departments and describe the difference between them.

*Show your work. Round to the nearest whole number:*

**Ages of Employees**

Sales	Delivery
23	18
34	21
35	52
67	24
41	33
20	47
30	31

Sales Mean: \_\_\_\_\_ years

Delivery Mean: \_\_\_\_\_ years

Difference: \_\_\_\_\_ years

64 Part A

Write the sample space for the outcomes of the toss of two six-sided die.

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

Part B

If order is important, how many outcomes are possible?

Answer: \_\_\_\_\_

Part C

If order is not important, how many outcomes are possible?

Answer: \_\_\_\_\_

65 Stefan and Gabe are playing a game that uses a standard 6-sided numbered die and a 10-sided lettered die labeled A through J. In the space below, create a table, organized list, or tree diagram to determine all possible outcomes.

Using the model you have drawn, what is the probability of rolling one of the first six letters of the alphabet and a number *greater than 4*?

Answer: \_\_\_\_\_