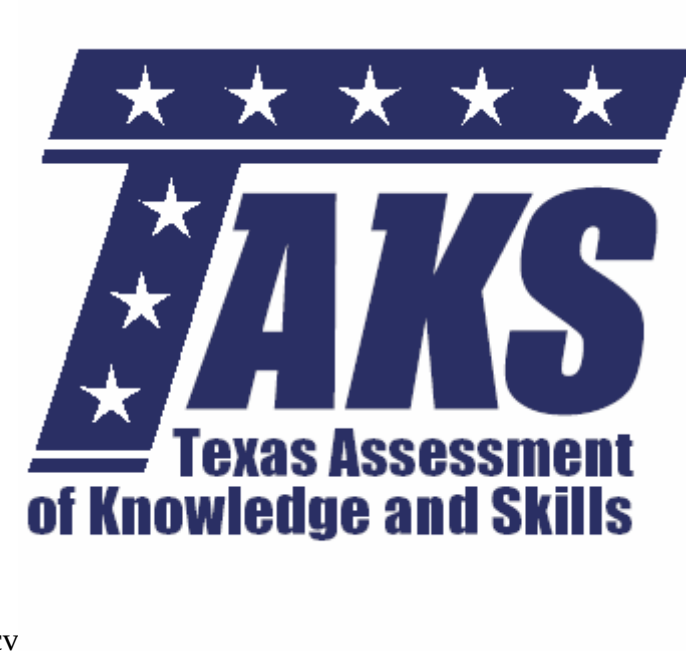


CV

MATHEMATICS Grade 6

Administered Spring 2004

Test by Objectives

Mathematics Chart

LENGTH

Metric	Customary
1 kilometer = 1000 meters	1 mile = 1760 yards
1 meter = 100 centimeters	1 mile = 5280 feet
1 centimeter = 10 millimeters	1 yard = 3 feet
	1 foot = 12 inches

CAPACITY AND VOLUME

Metric	Customary
1 liter = 1000 milliliters	1 gallon = 4 quarts
	1 gallon = 128 ounces
	1 quart = 2 pints
	1 pint = 2 cups
	1 cup = 8 ounces

MASS AND WEIGHT

Metric	Customary
1 kilogram = 1000 grams	1 ton = 2000 pounds
1 gram = 1000 milligrams	1 pound = 16 ounces

TIME

1 year = 365 days

1 year = 12 months

1 year = 52 weeks

1 week = 7 days

1 day = 24 hours

1 hour = 60 minutes

1 minute = 60 seconds

Mathematics Chart

Perimeter	square	$P = 4s$
	rectangle	$P = 2l + 2w$ or $P = 2(l + w)$
Circumference	circle	$C = 2\pi r$ or $C = \pi d$
Area	square	$A = s^2$
	rectangle	$A = lw$ or $A = bh$
	triangle	$A = \frac{1}{2}bh$ or $A = \frac{bh}{2}$
	trapezoid	$A = \frac{1}{2}(b_1 + b_2)h$ or $A = \frac{(b_1 + b_2)h}{2}$
	circle	$A = \pi r^2$
Volume	cube	$V = s^3$
	rectangular prism	$V = lwh$
Pi	π	$\pi \approx 3.14$ or $\pi \approx \frac{22}{7}$

Grade 6

Objective 1: The student will demonstrate an understanding of numbers, operations, and quantitative reasoning.

(6.2) **Number, operation, and quantitative reasoning.** The student adds, subtracts, multiplies, and divides to solve problems and justify solutions. The student is expected to

(D) estimate and round to approximate reasonable results and to solve problems where exact answers are not required.

5 Several middle school bands boarded buses after a marching competition. If there were 21 buses and about 47 band members on each bus, about how many band members were on the buses in all?

A 70
B 900
C 1,000
D 1,250

Grade 6

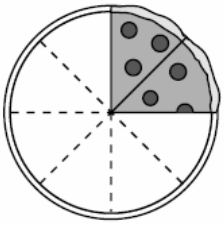
Objective 1: The student will demonstrate an understanding of numbers, operations, and quantitative reasoning.

(6.2) **Number, operation, and quantitative reasoning.** The student adds, subtracts, multiplies, and divides to solve problems and justify solutions. The student is expected to

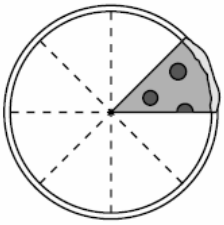
(A) model addition and subtraction situations involving fractions with [objects,] pictures, words, and numbers;

11 Frank and Joe each bought a small pizza and ate only part of their pizza. The pictures below show how much of the pizzas were left.

Frank's Pizza



Joe's Pizza



What portion of the pizza did Frank and Joe eat altogether?

A $\frac{3}{8}$

B $1\frac{3}{4}$

C $\frac{7}{8}$

D $1\frac{5}{8}$

Grade 6

Objective 1: The student will demonstrate an understanding of numbers, operations, and quantitative reasoning.

(6.2) **Number, operation, and quantitative reasoning.** The student adds, subtracts, multiplies, and divides to solve problems and justify solutions. The student is expected to

(C) use multiplication and division of whole numbers to solve problems including situations involving equivalent ratios and rates;

15 During basketball season Wanda made 2 out of every 3 free throws she attempted. In the last basketball game, Wanda attempted 12 free throws. How many free throws would she have been expected to make?

A 2
B 8
C 24
D 36

Objective 1: The student will demonstrate an understanding of numbers, operations, and quantitative reasoning.

(6.1) **Number, operation, and quantitative reasoning.** The student represents and uses rational numbers in a variety of equivalent forms. The student is expected to

(E) identify factors and multiples including common factors and common multiples.

17 Find the greatest common factor of 12, 24, and 36.

A 6
B 12
C 18
D 24

Objective 1: The student will demonstrate an understanding of numbers, operations, and quantitative reasoning.

(6.2) **Number, operation, and quantitative reasoning.** The student adds, subtracts, multiplies, and divides to solve problems and justify solutions. The student is expected to

(B) use addition and subtraction to solve problems involving fractions and decimals;

21 The Springer family took a trip for the holidays. When they left home, the odometer in their car read 5,364.6 miles. When they returned from their trip, the odometer read 7,347.0 miles. How many miles did the Springers travel?

Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.

Grade 6

Objective 1: The student will demonstrate an understanding of numbers, operations, and quantitative reasoning.

(6.1) **Number, operation, and quantitative reasoning.** The student represents and uses rational numbers in a variety of equivalent forms. The student is expected to

(B) generate equivalent forms of rational numbers including whole numbers, fractions, and decimals;

28 The formula $F = 9/5\ C + 32$ can be used to convert a temperature from degrees Celsius to degrees Fahrenheit. Which of the following best represents 9/5?

F 9.5
G 1.8
H 0.55
J 0.18

Objective 1: The student will demonstrate an understanding of numbers, operations, and quantitative reasoning.

(6.1) **Number, operation, and quantitative reasoning.** The student represents and uses rational numbers in a variety of equivalent forms. The student is expected to

(E) identify factors and multiples including common factors and common multiples.

29 Which of the following is the least common multiple that Valerie can use to add three fractions with denominators of 6, 8, and 9?

A 48
B 54
C 72
D 144

Grade 6

Objective 1: The student will demonstrate an understanding of numbers, operations, and quantitative reasoning.

(6.1) **Number, operation, and quantitative reasoning.** The student represents and uses rational numbers in a variety of equivalent forms. The student is expected to

(A) compare and order non-negative rational numbers;

31 Which statement about the mixed number $1\frac{1}{3}$ is true?

A $1\frac{3}{10} > 1\frac{1}{3}$

B $2 < 1\frac{1}{3}$

C $1\frac{1}{3} > 1\frac{3}{10}$

D $1\frac{1}{3} < 1\frac{1}{4}$

Objective 1: The student will demonstrate an understanding of numbers, operations, and quantitative reasoning.

(6.1) **Number, operation, and quantitative reasoning.** The student represents and uses rational numbers in a variety of equivalent forms. The student is expected to

(D) write prime factorizations using exponents;

39 Which is the prime factorization of 315?

A $3^3 \cdot 5$
B $3^3 \cdot 7$
C $3^2 \cdot 5 \cdot 7$
D $3 \cdot 5^2 \cdot 7$

Grade 6

Objective 1: The student will demonstrate an understanding of numbers, operations, and quantitative reasoning.

(6.2) **Number, operation, and quantitative reasoning.** The student adds, subtracts, multiplies, and divides to solve problems and justify solutions. The student is expected to

(B) use addition and subtraction to solve problems involving fractions and decimals;

45 John is going to make three kinds of cookies. He will need $2\frac{1}{3}$ cups flour for the first kind, $2\frac{1}{4}$ cups flour for the second kind, and $3\frac{1}{3}$ cups flour for the third kind. How much flour does John need for all three kinds of cookies?

A $8\frac{1}{12}$ cups

B $7\frac{11}{12}$ cups

C $5\frac{2}{3}$ cups

D $5\frac{7}{12}$ cups

Grade 6

Objective 2: The student will demonstrate an understanding of patterns, relationships, and algebraic reasoning.

(6.4) **Patterns, relationships, and algebraic thinking.** The student uses letters as variables in mathematical expressions to describe how one quantity changes when a related quantity changes. The student is expected to

(A) use tables and symbols to represent and describe proportional and other relationships involving conversions, sequences, perimeter, area, etc.;

2 At Sandra's school there is 1 teacher for every 15 students. There are 630 students at the school. Which proportion can be used to find *x*, the number of teachers?

F $\frac{x}{15} = \frac{1}{630}$

G $\frac{15}{1} = \frac{x}{630}$

H $\frac{1}{15} = \frac{x}{630}$

J $\frac{x}{1} = \frac{15}{615}$

Objective 2: The student will demonstrate an understanding of patterns, relationships, and algebraic reasoning.

(6.3) **Patterns, relationships, and algebraic thinking.** The student solves problems involving proportional relationships. The student is expected to

(C) use ratios to make predictions in proportional situations.

9 Josie's horse eats about 2 bales of hay every 5 days. About how many bales of hay does Josie's horse eat in 31 days?

A 8
B 12
C 16
D 78

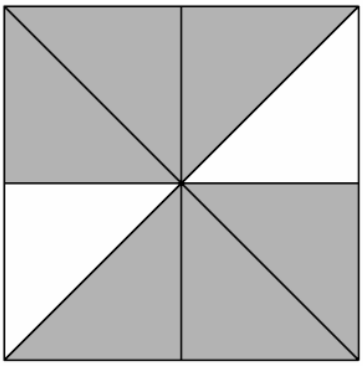
Grade 6

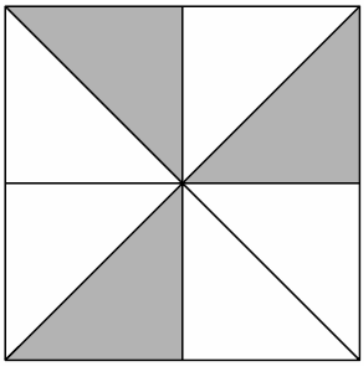
Objective 2: The student will demonstrate an understanding of patterns, relationships, and algebraic reasoning.

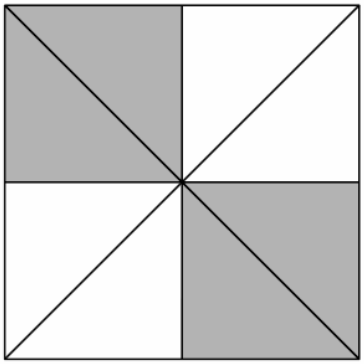
(6.3) **Patterns, relationships, and algebraic thinking.** The student solves problems involving proportional relationships. The student is expected to

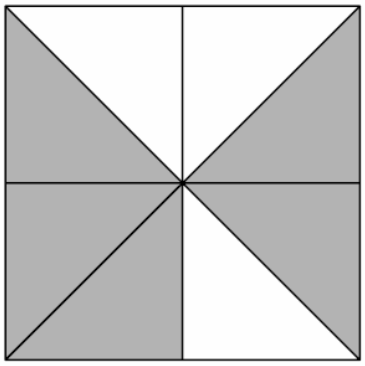
(B) represent ratios and percents with [concrete] models, fractions, and decimals;

14 Each square below is divided into sections of equal size. Which square has 62.5% of its total area shaded?

F 

H 

G 

J 

Grade 6

Objective 2: The student will demonstrate an understanding of patterns, relationships, and algebraic reasoning.

(6.5) **Patterns, relationships, and algebraic thinking.** The student uses letters to represent an unknown in an equation. The student is expected to

(A) formulate an equation from a problem situation.

19 If the cost of renting a canoe is a basic fee of $5 plus an additional $2.50 for each hour that the canoe is rented, which equation can be used to find c, the cost in dollars of the rental for h hours?

A $c = 2.5h + 5$

B $c = 5h + 2.5$

C $c = 2.5(h + 5)$

D $c = 5(h + 2.5)$

Grade 6

Objective 2: The student will demonstrate an understanding of patterns, relationships, and algebraic reasoning.

(6.4) **Patterns, relationships, and algebraic thinking.** The student uses letters as variables in mathematical expressions to describe how one quantity changes when a related quantity changes. The student is expected to

(B) generate formulas to represent relationships involving perimeter, area, volume of a rectangular prism, etc., from a table of data.

25 The table below shows the areas of a triangle where the height of the triangle stays the same but the base changes.

Areas of Triangles

Height (units)	Base (units)	Area (square units)
6	2	6
6	4	12
6	6	18
6	8	24
6	*n*	?

Which expression can be used to find the area of a triangle that has a height of 6 units and a base of *n* units?

A $\frac{n}{2}$

B $\frac{6}{2}$

C $\frac{6n}{2}$

D $6n$

Grade 6

Objective 2: The student will demonstrate an understanding of patterns, relationships, and algebraic reasoning.

(6.3) **Patterns, relationships, and algebraic thinking.** The student solves problems involving proportional relationships. The student is expected to

(A) use ratios to describe proportional situations;

26 An animal shelter currently has 20 cats and 25 dogs. What is the ratio of cats to dogs?

F 5 to 4
G 4 to 9
H 4 to 5
J 1 to 5

Objective 2: The student will demonstrate an understanding of patterns, relationships, and algebraic reasoning.

(6.4) **Patterns, relationships, and algebraic thinking.** The student uses letters as variables in mathematical expressions to describe how one quantity changes when a related quantity changes. The student is expected to

(B) generate formulas to represent relationships involving perimeter, area, volume of a rectangular prism, etc., from a table of data.

34 What is the rule to find the value of a term in the sequence below?

Sequence

Position, *n*	Value of Term
1	1
2	4
3	7
4	10
5	13
n	?

F $n + 3$
G $3n - 2$
H $3n$
J $n - 2$

Grade 6

Objective 2: The student will demonstrate an understanding of patterns, relationships, and algebraic reasoning.

(6.3) **Patterns, relationships, and algebraic thinking.** The student solves problems involving proportional relationships. The student is expected to

(C) use ratios to make predictions in proportional situations.

37 Manuel's heart beats 9 times per 10 seconds while Manuel is resting. About how many times would Manuel's heart beat during 3 minutes of rest?

A 27
B 162
C 270
D 200

Objective 2: The student will demonstrate an understanding of patterns, relationships, and algebraic reasoning.

(6.3) **Patterns, relationships, and algebraic thinking.** The student solves problems involving proportional relationships. The student is expected to

(B) represent ratios and percents with [concrete] models, fractions, and decimals;

42 Franklin's Vending Service received a shipment of soda for its machines. The manager determined that 15% of the cans were damaged. What fraction of the cans were damaged?

F $\frac{1}{15}$

G $\frac{3}{20}$

H $\frac{1}{5}$

J $\frac{2}{3}$

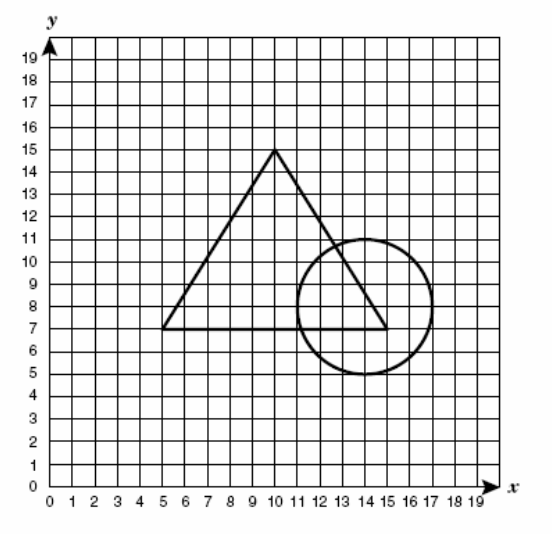
Grade 6

Objective 3: The student will demonstrate an understanding of geometry and spatial reasoning.

(6.7) **Geometry and spatial reasoning.** The student uses coordinate geometry to identify location in two dimensions. The student is expected to

(A) locate and name points on a coordinate plane using ordered pairs of non-negative rational numbers.

1 Which ordered pair represents a point located inside both the triangle and the circle?



A (8, 4)
B (8, 10)
C (14, 8)
D (15, 9)

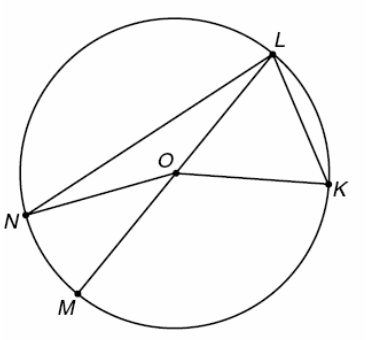
Grade 6

Objective 3: The student will demonstrate an understanding of geometry and spatial reasoning.

(6.6) **Geometry and spatial reasoning.** The student uses geometric vocabulary to describe angles, polygons, and circles. The student is expected to

(C) describe the relationship between radius, diameter, and circumference of a circle.

10 A circle with center at point *O* is shown below.



Which line segment is 2 times the length of radius *OK*?

F Segment *LN*
G Segment *LM*
H Segment *LK*
J Segment *ON*

Objective 3: The student will demonstrate an understanding of geometry and spatial reasoning.

(6.6) **Geometry and spatial reasoning.** The student uses geometric vocabulary to describe angles, polygons, and circles. The student is expected to

(B) identify relationships involving angles in triangles and quadrilaterals;

12 A triangle has angles measuring 45° and 55°. What is the measure of the triangle's third angle?

F 80°
G 100°
H 125°
J 135°

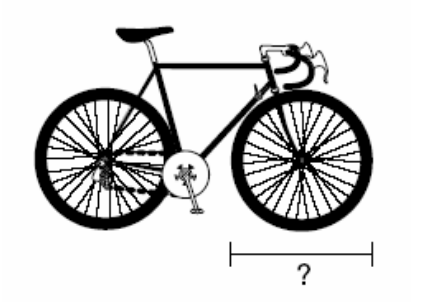
Grade 6

Objective 3: The student will demonstrate an understanding of geometry and spatial reasoning.

(6.6) **Geometry and spatial reasoning.** The student uses geometric vocabulary to describe angles, polygons, and circles. The student is expected to

(C) describe the relationship between radius, diameter, and circumference of a circle.

23 Trevor knows the circumference of his bicycle tire, but he needs to find the diameter.



Which method can Trevor use to find the diameter?

A Multiply the circumference by 2 and divide the result by Π
B Divide the circumference by 2 and multiply the result by Π
C Multiply the circumference by Π
D Divide the circumference by Π

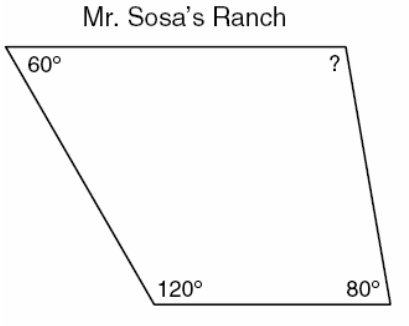
Grade 6

Objective 3: The student will demonstrate an understanding of geometry and spatial reasoning.

(6.6) **Geometry and spatial reasoning.** The student uses geometric vocabulary to describe angles, polygons, and circles. The student is expected to

(B) identify relationships involving angles in triangles and quadrilaterals;

40 Mr. Sosa has a ranch in the shape of a trapezoid. The sides of the ranch form angles measuring 60°, 80°, and 120°. What is the measure of the fourth angle?



F 80°
G 100°
H 240°
J 260°

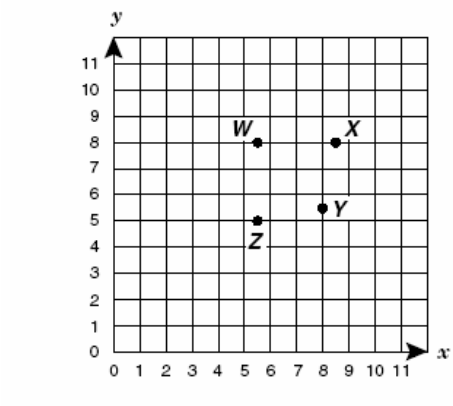
Grade 6

Objective 3: The student will demonstrate an understanding of geometry and spatial reasoning.

(6.7) **Geometry and spatial reasoning.** The student uses coordinate geometry to identify location in two dimensions. The student is expected to

(A) locate and name points on a coordinate plane using ordered pairs of non-negative rational numbers.

41 What point on the grid below corresponds to the coordinate pair $(5\frac{1}{2}, 8)$?



A Point *W*
B Point *X*
C Point *Y*
D Point *Z*

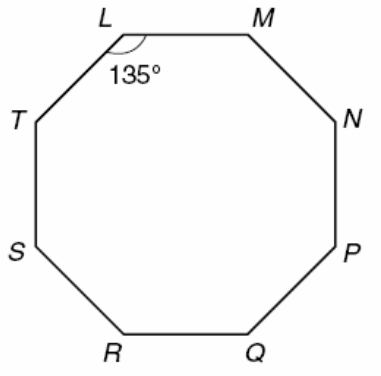
Grade 6

Objective 3: The student will demonstrate an understanding of geometry and spatial reasoning.

(6.6) **Geometry and spatial reasoning.** The student uses geometric vocabulary to describe angles, polygons, and circles. The student is expected to

(A) use angle measurements to classify angles as acute, obtuse, or right;

44 The angle at each vertex of a regular octagon is 135°.



What type of angle is at each vertex of a regular octagon?

F Obtuse
G Right
H Straight
J Acute

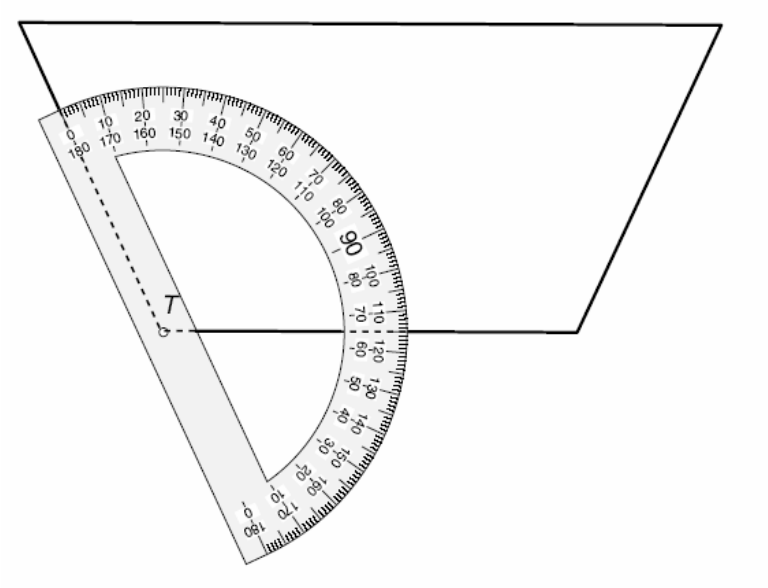
Grade 6

Objective 4: The student will demonstrate an understanding of the concepts and uses of measurement.

(6.8) **Measurement.** The student solves application problems involving estimation and measurement of length, area, time, temperature, capacity, weight, and angles. The student is expected to

(C) measure angles;

7 Lynn's garden is shaped like an isosceles trapezoid.



Find the measure of $\angle T$ to the nearest degree.

A 65°
B 75°
C 115°
D 125°

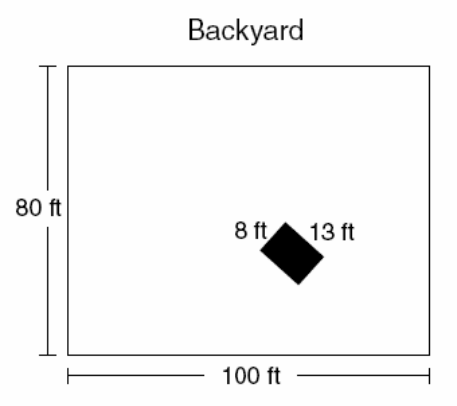
Grade 6

Objective 4: The student will demonstrate an understanding of the concepts and uses of measurement.

(6.8) **Measurement.** The student solves application problems involving estimation and measurement of length, area, time, temperature, capacity, weight, and angles. The student is expected to

(B) select and use appropriate units, tools, or formulas to measure and to solve problems involving length (including perimeter and circumference), area, time, temperature, capacity, and weight;

16 A family put a rectangular patio in their backyard and planted grass in the rest of the yard. The rectangular backyard is 100 feet by 80 feet, and the patio is 13 feet by 8 feet. What is the area of the backyard that is planted with grass?



F 402 sq ft
G 7,896 sq ft
H 8,000 sq ft
J 8,104 sq ft

Objective 4: The student will demonstrate an understanding of the concepts and uses of measurement.

(6.8) **Measurement.** The student solves application problems involving estimation and measurement of length, area, time, temperature, capacity, weight, and angles. The student is expected to

(A) estimate measurements and evaluate reasonableness of results;

30 Gerald got out of bed at 7:05 A.M. and returned home from school at 2:50 P.M. About how many hours elapsed between the time he got out of bed and the time he returned home from school?

F 4 h
G 5 h
H 7 h
J 8 h

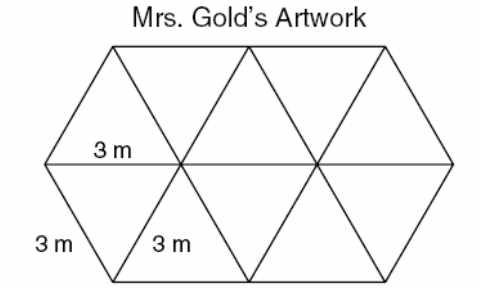
Grade 6

Objective 4: The student will demonstrate an understanding of the concepts and uses of measurement.

(6.8) **Measurement.** The student solves application problems involving estimation and measurement of length, area, time, temperature, capacity, weight, and angles. The student is expected to

(B) select and use appropriate units, tools, or formulas to measure and to solve problems involving length (including perimeter and circumference), area, time, temperature, capacity, and weight

32 Mrs. Gold designed a piece of art by outlining equilateral triangles with wire.



How much wire did Mrs. Gold use to complete her piece of art?

F 9 m
G 33 m
H 90 m
J 57 m

Objective 4: The student will demonstrate an understanding of the concepts and uses of measurement.

(6.8) **Measurement.** The student solves application problems involving estimation and measurement of length, area, time, temperature, capacity, weight, and angles. The student is expected to

(D) convert measures within the same measurement system (customary and metric) based on relationships between units.

46 Pedro bought a 2-liter bottle of soda. What is the volume of the bottle in milliliters?

F 20,000 mL
G 2,000 mL
H 200 mL
J 20 mL

Grade 6

Objective 5: The student will demonstrate an understanding of probability and statistics.

(6.10) **Probability and statistics.** The student uses statistical representations to analyze data. The student is expected to

(A) [draw and] compare different graphical representations of the same data;

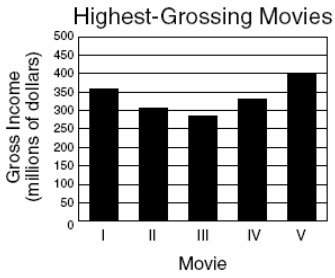
4 The table shows the gross income of 5 of the highest-grossing U.S. movies from 1982 to 1996.

Highest-Grossing Movies

Movie	Gross Income (millions of dollars)
I	399.8
II	329.7
III	285.0
IV	306.2
V	356.8

Which graph most accurately displays the information in the table?

F



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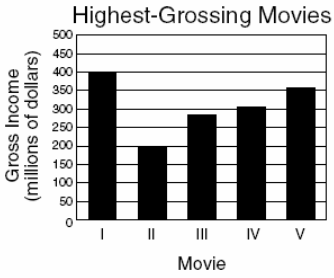
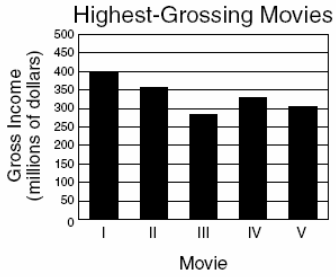


G



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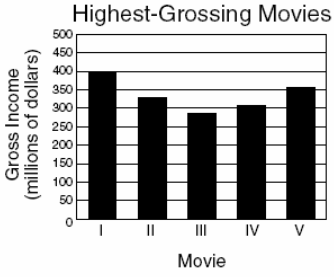


Grade 6

Objective 5: The student will demonstrate an understanding of probability and statistics.

(6.10) **Probability and statistics.** The student uses statistical representations to analyze data. The student is expected to

(B) use median, mode, and range to describe data;

13 The Q&R Band performed concerts from 1992 to 2001. The table shows the number of concerts the band performed each year.

Q&R Band Performances

Year	Number of Concerts
1992	168
1993	172
1994	142
1995	180
1996	162
1997	162
1998	180
1999	180
2000	168
2001	172

What is the median of the number of concerts?

A 162
B 170
C 180
D 172

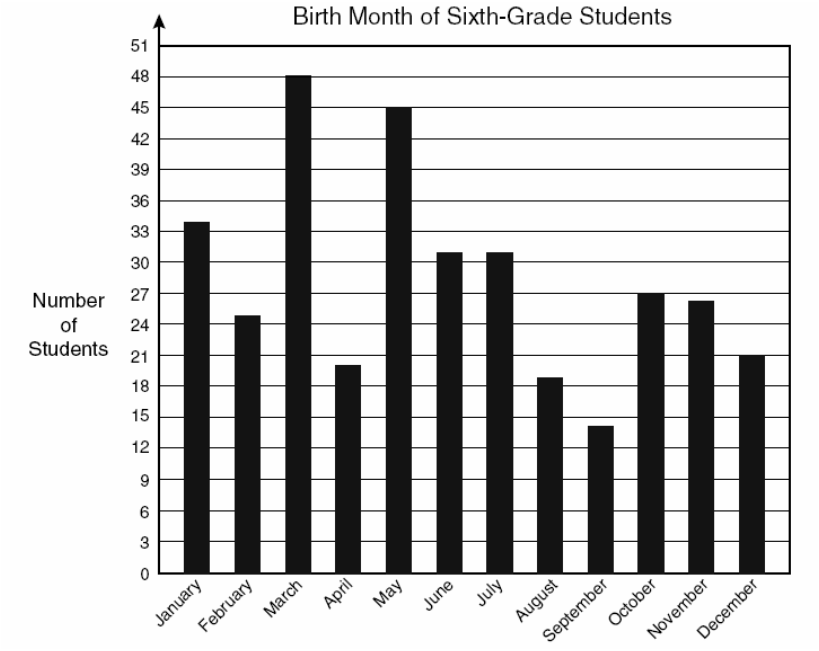
Grade 6

Objective 5: The student will demonstrate an understanding of probability and statistics.

(6.10) **Probability and statistics.** The student uses statistical representations to analyze data. The student is expected to

(D) solve problems by collecting, organizing, displaying, and interpreting data.

20 Apollo Middle School collected the following data from students.



Which statement is supported by the graph?

F More than 25% of the students were born in either January or March.
G The second half of the year had fewer births than the first half.
H May was the birth month for 30 students.
J The same number of births per month occurred in February, October, and November.

Grade 6

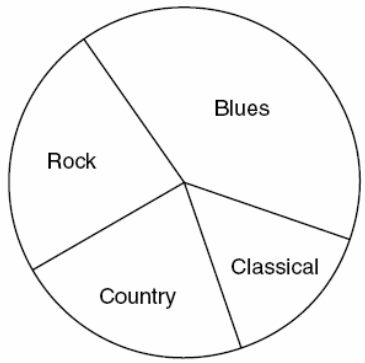
Objective 5: The student will demonstrate an understanding of probability and statistics.

(6.10) **Probability and statistics.** The student uses statistical representations to analyze data. The student is expected to

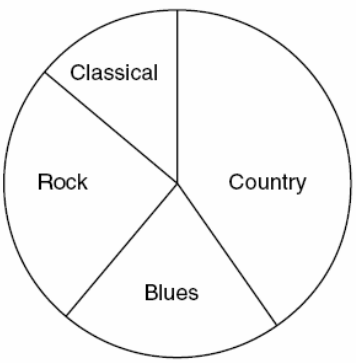
(C) sketch circle graphs to display data;

22 At Central City Music Store, 15% of the music sold is classical, 20% is blues, 25% is rock, and 40% is country. Which graph best represents these data?

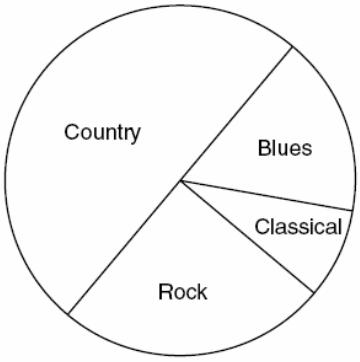
F



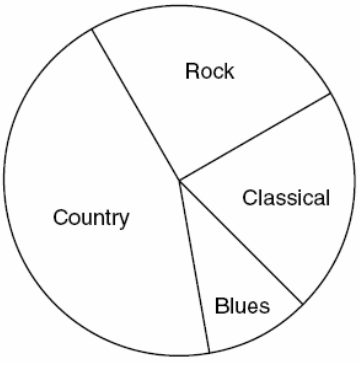
H



G



J



Grade 6

Objective 5: The student will demonstrate an understanding of probability and statistics.

(6.9) **Probability and statistics.** The student uses experimental and theoretical probability to make predictions. The student is expected to

(B) find the probabilities of a simple event and its complement and describe the relationship between the two.

35 Nate has a bag containing 3 red, 2 blue, 4 yellow, and 3 green marbles. If he randomly chooses one marble from the bag, what is the probability that the marble will be blue?

A $\frac{5}{6}$

B $\frac{1}{3}$

C $\frac{1}{4}$

D $\frac{1}{6}$

Grade 6

Objective 5: The student will demonstrate an understanding of probability and statistics.

(6.9) **Probability and statistics.** The student uses experimental and theoretical probability to make predictions. The student is expected to

(A) construct sample spaces using lists, tree diagrams, and combinations;

43 Bob's Lunch Café offers 3 kinds of sandwich fillings and 3 kinds of bread. Which table shows all the possible sandwich combinations at Bob's Lunch Café?

A

Sandwich Combinations

Bread	Sandwich Filling
White	Chicken
Wheat	Chicken
Sourdough	Chicken
White	Tuna
Wheat	Tuna
Sourdough	Tuna

C

Sandwich Combinations

Bread	Sandwich Filling
White	Chicken
Wheat	Tuna
Sourdough	Ham

B

Sandwich Combinations

Bread	Sandwich Filling
White	Chicken
White	Tuna
White	Ham
Wheat	Chicken
Wheat	Tuna
Wheat	Ham
Sourdough	Chicken
Sourdough	Tuna
Sourdough	Ham

D

Sandwich Combinations

Bread	Sandwich Filling
White	Chicken
White	Chicken
White	Chicken
Wheat	Tuna
Wheat	Tuna
Wheat	Tuna
Sourdough	Ham
Sourdough	Ham
Sourdough	Ham

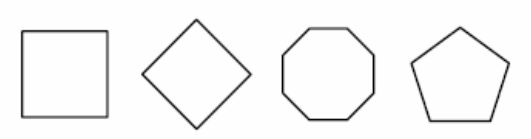
Grade 6

Objective 6: The student will demonstrate an understanding of the mathematical processes and tools used in problem solving.

(6.13) **Underlying processes and mathematical tools.** The student uses logical reasoning to make conjectures and verify conclusions. The student is expected to

(A) make conjectures from patterns or sets of examples and nonexamples;

3 Look at the shapes below.



Which statement best describes these shapes?

A They all appear to be regular polygons.
B They all have an even number of sides.
C They all have an even number of angles.
D They all contain only right angles.

Objective 6: The student will demonstrate an understanding of the mathematical processes and tools used in problem solving.

(6.11) **Underlying processes and mathematical tools.** The student applies Grade 6 mathematics to solve problems connected to everyday experiences, investigations in other disciplines, and activities in and outside of school. The student is expected to

(C) select or develop an appropriate problem-solving strategy from a variety of different types, including drawing a picture, looking for a pattern, systematic guessing and checking, acting it out, making a table, working a simpler problem, or working backwards to solve a problem.

6 Miss Caruso's car travels an average of 22 miles per gallon of gasoline. The gas tank holds 12 gallons. How would you find the number of miles Miss Caruso can drive on 1 full tank of gasoline?

F Add the car's average mileage in miles per gallon to the number of gallons the tank can hold
G Subtract the number of gallons the tank can hold from the car's average mileage in miles per gallon
H Multiply the car's average mileage in miles per gallon by the number of gallons the tank can hold
J Divide the car's average mileage in miles per gallon by the number of gallons the tank can hold

Grade 6

Objective 6: The student will demonstrate an understanding of the mathematical processes and tools used in problem solving.

(6.11) **Underlying processes and mathematical tools.** The student applies Grade 6 mathematics to solve problems connected to everyday experiences, investigations in other disciplines, and activities in and outside of school. The student is expected to

(C) select or develop an appropriate problem-solving strategy from a variety of different types, including drawing a picture, looking for a pattern, systematic guessing and checking, acting it out, making a table, working a simpler problem, or working backwards to solve a problem.

8 Jade is 3 years older than Steven, and Steven is 5 years younger than Andrew, who is 15 years old. Which table could be used to find Jade's age?

F

Ages

Name	Age (years)
Jade	7
Steven	8
Andrew	15

G

Ages

Name	Age (years)
Jade	15 – 5 + 3
Steven	15 – 5
Andrew	15

H

Ages

Name	Age (years)
Jade	15 – 5
Steven	15 – 5 + 3
Andrew	15

J

Ages

Name	Age (years)
Jade	3
Steven	5
Andrew	15

Grade 6

Objective 6: The student will demonstrate an understanding of the mathematical processes and tools used in problem solving.

(6.11) **Underlying processes and mathematical tools.** The student applies Grade 6 mathematics to solve problems connected to everyday experiences, investigations in other disciplines, and activities in and outside of school. The student is expected to

(B) use a problem-solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness;

18 Mrs. Miller is baking cookies for 16 children. She has baked 2 dozen cookies. If she wants each child to receive exactly 2 cookies and have no cookies left over, how many more cookies should she bake?

F 1.5
G 8
H 24
J 32

Objective 6: The student will demonstrate an understanding of the mathematical processes and tools used in problem solving.

(6.11) **Underlying processes and mathematical tools.** The student applies Grade 6 mathematics to solve problems connected to everyday experiences, investigations in other disciplines, and activities in and outside of school. The student is expected to

(C) select or develop an appropriate problem-solving strategy from a variety of different types, including drawing a picture, looking for a pattern, systematic guessing and checking, acting it out, making a table, working a simpler problem, or working backwards to solve a problem.

24 Felicia went shopping for clothes. She bought a pair of jeans priced at $28.00, a sweater priced at $32.50, and a belt priced at $18.75. If there was an 8.75% tax on clothing items, which procedure could be used to find the amount of tax Felicia paid?

F Multiply the tax rate by the sum of the prices of the clothing items
G Add the prices of the clothing items to the tax rate
H Add the prices of the clothing items
J Multiply the tax rate by the price of the most expensive clothing item

Grade 6

Objective 6: The student will demonstrate an understanding of the mathematical processes and tools used in problem solving.

(6.12) **Underlying processes and mathematical tools.** The student communicates about Grade 6 mathematics through informal and mathematical language, representations, and models. The student is expected to

(A) communicate mathematical ideas using language, efficient tools, appropriate units, and graphical, numerical, physical, or algebraic mathematical models.

27 Mrs. Valcome has $25.00 to spend on seeds for her flower garden. Marigold seeds cost $1.50 per package, and zinnia seeds cost $1.25 per package, tax included. If Mrs. Valcome buys 10 packages of marigold seeds, how can she determine how much money she has left to spend on zinnia seeds?

A Add $1.50 and $1.25
B Subtract the product of 10 and $1.50 from $25.00
C Multiply $1.25 and 10
D Divide 10 by $1.25

Objective 6: The student will demonstrate an understanding of the mathematical processes and tools used in problem solving.

(6.11) **Underlying processes and mathematical tools.** The student applies Grade 6 mathematics to solve problems connected to everyday experiences, investigations in other disciplines, and activities in and outside of school. The student is expected to

(B) use a problem-solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness;

33 Tickets for a circus performance cost $9.50 for an adult and $6.75 for a child. Mr. Snyder and some of his friends, a group of 4 adults and 5 children, went to the circus performance. Mr. Snyder paid for all the tickets.

Read the problem-solving steps shown below. Arrange the steps in the correct order for Mr. Snyder to find the total cost for the tickets.

Step K: Add the two products together

Step L: Write down the number of adults and the number of children going to the circus performance

Step M: Multiply the cost of an adult ticket by the number of adults

Step N: Multiply the cost of a child's ticket by the number of children

Which list shows the steps in the correct order?

A L, K, M, N
B L, M, N, K
C N, M, L, K
D M, N, L, K

Grade 6

Objective 6: The student will demonstrate an understanding of the mathematical processes and tools used in problem solving.

(6.11) **Underlying processes and mathematical tools.** The student applies Grade 6 mathematics to solve problems connected to everyday experiences, investigations in other disciplines, and activities in and outside of school. The student is expected to

(A) identify and apply mathematics to everyday experiences, to activities in and outside of school, with other disciplines, and with other mathematical topics;

36 Mr. and Mrs. Gunther tiled their rectangular porch using square tiles. Each box of tile contained 30 square tiles. The rectangular porch measured 38 feet by 22 feet. What missing piece of information is needed in order to find the number of boxes of tile the Gunthers needed?

F Area of each square tile
G Perimeter of the box
H Perimeter of the porch
J Area of the porch

Objective 6: The student will demonstrate an understanding of the mathematical processes and tools used in problem solving.

(6.12) **Underlying processes and mathematical tools.** The student communicates about Grade 6 mathematics through informal and mathematical language, representations, and models. The student is expected to

(A) communicate mathematical ideas using language, efficient tools, appropriate units, and graphical, numerical, physical, or algebraic mathematical models.

38 If Mr. Albright drives at a constant speed of 65 miles per hour, which method can be used to find the number of hours it will take him to drive 260 miles?

F Add 65 and 260
G Subtract 65 from 260
H Multiply 260 by 65
J Divide 260 by 65

Grade: 06
Subject: Mathematics
Administration: April 2004

Item Number	Correct Answer	Objective Measured	Student Expectations
01	C	03	6.7 (A)
02	H	02	6.4 (A)
03	A	06	6.13 (A)
04	J	05	6.10 (A)
05	C	01	6.2 (D)
06	H	06	6.11 (C)
07	C	04	6.8 (C)
08	G	06	6.11 (C)
09	B	02	6.3 (C)
10	G	03	6.6 (C)
11	D	01	6.2 (A)
12	F	03	6.6 (B)
13	B	05	6.10 (B)
14	J	02	6.3 (B)
15	B	01	6.2 (C)
16	G	04	6.8 (B)
17	B	01	6.1 (E)
18	G	06	6.11 (B)
19	A	02	6.5 (A)
20	G	05	6.10 (D)
21	1982.4	01	6.2 (B)
22	H	05	6.10 (C)
23	D	03	6.6 (C)
24	F	06	6.11 (C)
25	C	02	6.4 (B)
26	H	02	6.3 (A)
27	B	06	6.12 (A)
28	G	01	6.1 (B)
29	C	01	6.1 (E)
30	J	04	6.8 (A)
31	C	01	6.1 (A)
32	J	04	6.8 (B)
33	B	06	6.11 (B)
34	G	02	6.4 (B)
35	D	05	6.9 (B)
36	F	06	6.11 (A)
37	B	02	6.3 (C)
38	J	06	6.12 (A)
39	C	01	6.1 (D)
40	G	03	6.6 (B)
41	A	03	6.7 (A)
42	G	02	6.3 (B)
43	B	05	6.9 (A)
44	F	03	6.6 (A)
45	B	01	6.2 (B)
46	G	04	6.8 (D)