

MATHEMATICS

Grade 10

TEKS/TAKS

Multiple Choice Questions

Organized by TEKS

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Mathematics Grade 10 TAKS MULTIPLE CHOICE QUESTIONS CORRELATED BY TEKS

TAKS Objective 1

The student will describe functional relationships in a variety of ways

TEKS	Student Expectation Short Description	Number of Questions
A.1A	Determine independent and dependent quantities in relationships	13
A.1B	Use data sets to determine functional relationships	13
A.1C	Describe functional relationships using equations and inequalities	17
A.1D	Represent relationships among quantities using models, tables, graphs, diagrams, verbal descriptions, equations and inequalities	42
A.1E	Interpret and make inferences from functional relationships	15

TAKS Objective 2

The student will demonstrate an understanding of the properties and attributes of functions

TEKS	Student Expectation Short Description	Number of Questions
A.2A	Identify the general forms of the linear and quadratic parent functions	17
A.2B	Identify mathematical domains and ranges	13
A.2C	Interpret situations in terms of graphs	9
A.2D	Interpret scatterplots and models and predicts and makes decisions	11
A.3A	Use symbols to represent unknowns	11
A.3B	Look for patterns and represents generalizations algebraically	14
A.4A	Find function values, simplifies polynomial, solves equations and factors	24
A.4B	Use commutative, associative and distributive properties	13
A.4C	Connect equation notation to function notation	11

TAKS Objective 3

The student will demonstrate an understanding of linear functions.

TEKS	Student Expectation Short Description	Number of Questions
A.5A	Determine if situations can be represented by linear function	11
A.5C	Translate among and uses tabular, graphical or verbal descriptions	21
A.6A	Develop concept of slope and determines slope from graphs, tables and algebraic representation	17
A.6B	Interpret the meaning of slope and intercepts using data, symbolic representation and graphs	24
A.6C	Investigate the effects of changes in m and b on the graph of $y = mx + b$	10
A.6D	Graph and write equations of lines given two points, a point and a slope, or the slope and the y -intercept	16
A.6E	Determine intercepts from graphs, tables, or algebraic representation	24
A.6F	Interpret and predict the effects of changing slope and y -intercept	13
A.6G	Relate direct variation and solves problems involving proportional change	14

Mathematics Grade 10 TAKS MULTIPLE CHOICE QUESTIONS CORRELATED BY TEKS

TAKS Objective 4

The student will formulate and use linear equations and inequalities.

TEKS	Student Expectation Short Description	Number of Questions
A.7A	Analyze situations involving linear functions and formulates linear equations and inequalities	19
A.7B	Investigate methods for solving linear functions	15
A.7C	Determine the reasonableness of solutions	11
A.8A	Formulate systems of linear equations to solve problems	13
A.8B	Solve systems of linear equations	20
A.8C	Interpret and determine reasonableness of solutions of equations	13

TAKS Objective 5

The student will demonstrate an understanding of quadratic and other non-linear functions.

TEKS	Student Expectation Short Description	Number of Questions
A.9B	Investigate the changes in a on the graph of $y = ax^2 + c$	10
A.9C	Investigate the effects of changes of c on the graph of $y = ax^2 + c$	19
A.9D	Analyze the graphs of quadratic functions and draws conclusions	10
A.10A	Solve quadratic equations	46
A.10B	Relate roots to solutions	14
A.11A	Use the laws of exponents	19

TAKS Objective 6

The student will demonstrate an understanding of geometric relationships and spatial reasoning

TEKS	Student Expectation Short Description	Number of Questions
8.6A	Generate similar shapes using dilations including enlargements and reductions	18
8.6B	Graph dilations, reflections and translations on a coordinate plane	23
8.7D	Locate and name points on a coordinate plane	24

TAKS Objective 7

The student will demonstrate an understanding of two and three-dimensional representations of geometric relationships and shapes

TEKS	Student Expectation Short Description	Number of Questions
8.7A	Draw solids from different perspectives	14
8.7B	Use geometric concepts and properties to solve problems	16
8.7C	Use pictures or models to demonstrate Pythagorean Theorem	10

Mathematics Grade 10 TAKS MULTIPLE CHOICE QUESTIONS CORRELATED BY TEKS

TAKS Objective 8

The student will demonstrate an understanding of the concepts and uses of measurement and similarity

TEKS	Student Expectation Short Description	Number of Questions
8.8A	Find surface area using models and nets for prisms and cylinders	12
8.8B	Connect models to formulas for volume of prisms, cylinders, pyramids, spheres and cones	31
8.8C	Estimate and use formulas to find lateral and total surface area and volume	32
8.9A	Use Pythagorean Theorem to solve problems	14
8.9B	Find missing measurements in similar figures	17
8.10A	Describe the resulting effects on perimeter and area when dimensions are changed proportionally	29
8.10B	Describe the resulting effects volume when dimensions are changed proportionally	13

TAKS Objective 9

The student will demonstrate an understanding of percents, proportional relationships, probability and statistics in application problems.

TEKS	Student Expectation Short Description	Number of Questions
8.3B	Estimate and find solutions to problems involving percent and proportional relationships	21
8.11A	Find probabilities of independent and dependent events	22
8.11B	Use probabilities to make predictions and decisions	15
8.12A	Select appropriate measure of central tendency or range	12
8.12C	Select and use appropriate representation including line plots, line graphs, stem and leaf plots, , circle graphs, bar graphs, box and whisker plots, histograms and Venn diagrams	32
8.13B	Recognize misuses and evaluate predictions	13

TAKS Objective 10

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

TEKS	Student Expectation Short Description	Number of Questions
8.14A	Identify and apply mathematics in everyday experiences	15
8.14B	Use a problem solving model	16
8.14C	Select or develop appropriate problem-solving strategies	21
8.15A	Communicate mathematical ideas	9
8.16A	Make conjectures using patterns or examples and non-examples	22
8.16B	Validate conclusions using mathematical properties	15

TOTAL GRADE 10 QUESTIONS = 1033

Mr. Bolter packs jars of salted nuts into a packing container. The container has a mass of 1.25 kilograms. The mass of each jar of salted nuts is about 0.85 kilogram. If the function $y = 0.85x + 1.25$ describes the total mass, the variable x represents the –

- A total mass of a container filled with jars of salted nuts
- B total number of containers filled with jars of salted nuts
- C mass of each jar of salted nuts inside the container
- D number of jars of salted nuts packed into the container

Mr. Morris rents a rental car. The A-2 Rental Company charges a fixed fee of \$30 plus \$0.35 per mile the car is driven. If the function $y = 30 + 0.35x$ describes the total cost of Mr. Morris's rental car, the variable x represents the -

- A the amount of gallons of gasoline Mr. Morris must put in the car
- B the number of days Mr. Morris had the rental car
- C the cost for the mileage Mr. Morris drove the car
- D the number of miles Mr. Morris drove the car

Jimmy earned and saved \$2800 working during summer break from college. He plans to use \$400 a month for his personal expenses at college this fall. If $y = 2800 - 400x$ where x is the number of months he has been using his money, the variable y represents-

- A the amount of money Jimmy has used so far
- B the number of months Jimmy has remaining to spend his money
- C the amount of money Jimmy has remaining of his savings
- D the total amount of Jimmy's expenses at college per month

The Longley family bought a new family van. The total cost of the new van was \$23,000. They made a down payment of \$4000 and agreed to make monthly payments of \$327. If $y = 23,000 - 4000 - 327x$, where x is the number of months the family have made payments on the van, then the variable y represents–

- A the amount of money the Longley family still owes on the van
- B the number of months the Longley family has been making payments on the van
- C the amount of money the Longley family has paid on the van
- D the amount of interest the Longley family has paid on the van

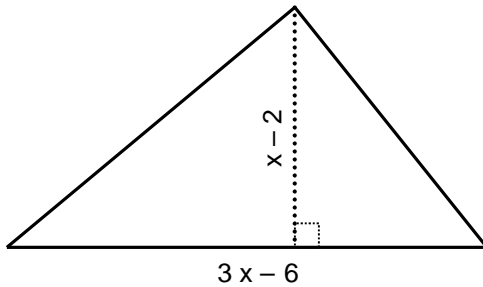
The cost of a long distance phone call is 30 cents for the first minute and 8 cents for every other minute. The cost of a long distance call can be described by the function $C(x) = \$0.30 + 0.08x$. The variable x represents–

- A the total number of minutes of the phone call
- B one less than the total number of minutes of the call
- C the time of the day of the phone call
- D one more than the total number of minutes of the call

Mrs. Jones is getting a 6% raise in her salary this year at her company. If she earned y dollars last year, which expression represents her salary for this year?

- A $y + 0.06$
- B $0.06y$
- C $y + 0.06y$
- D $y + 0.6y$

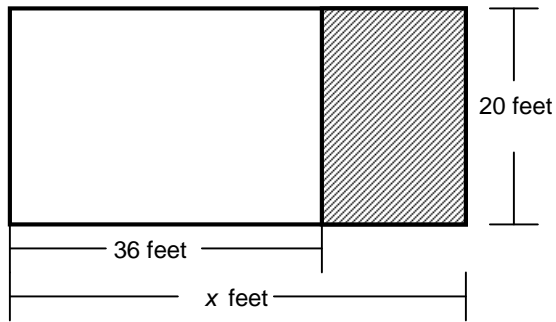
A triangle with its dimensions is shown below.



Which expression best represents the area of the triangle?

- A $[(x - 2)(3x - 6)] \div 2$
- B $[(x - 2)^2 + (3x - 6)^2] \div 2$
- C $(x - 2)(3x - 6)$
- D $2(x - 2)(3x - 6)$

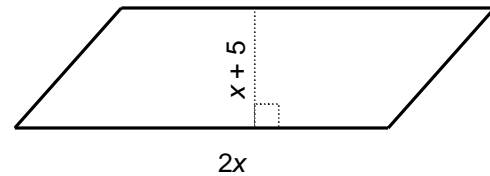
A portion of the figure below is shaded.



How can the area of the shaded portion be expressed using x ?

- A $\frac{20 \times 36}{2x}$
- B $20 \times 36 - x$
- C $20 \times (36 - x)$
- D $(20)(x - 36)$

A parallelogram with its dimensions is shown below. The area of a parallelogram can be calculated by finding the product of the base and the height.



Which expression best represents the area of the parallelogram?

- A $2x + (x + 5)$
- B $2x(x + 5)$
- C $[(2x)(x + 5)] \div 2$
- D $2(2x)(x + 5)$

John and Teddy mow lawns. They charge \$25 a lawn. Teddy can mow 3 more lawns in a day than John.. If x represents the number of lawns John mows in one day, which expression can be used to represent the income they earn while working for a day?

- A $25[x + (3x)]$
- B $25[x + (x + 3)]$
- C $25 \times 3 \times 3x$
- D $25(3)(x + 3)$

Josh can wash 4 cars in an hour. Joe can wash $\frac{5}{4}$ as many cars as Josh washes in an hour. Which of the following expression represents the number of cars they can wash together in x hours?

- A $x[4 + (\frac{5}{4} \times x)]$
- B $4 \times \frac{5}{4}x$
- C $x[4 + (\frac{5}{4} \times 4)]$
- D $x(4)(x + \frac{5}{4})$

In about 100 baseball games Kenny's team has scored approximately 520 runs. If the team continues at this rate, about how many runs could the team expect to score in a 160-game season?

- A 710
- B 780
- C 830
- D 950

A decorator uses 5 mums, 2 asters, 8 daisies, and 5 roses for a certain spring flower arrangement. Last week between 500 and 570 flowers were used to make these arrangements. About how many of these arrangements were made?

- A 20
- B 26
- C 32
- D 38

A school auditorium has 1000 seats. Last week 590 tickets were sold for a school play to be held in the auditorium on Friday night. The tickets sold for \$9 each. Which is the best estimate of the total amount of money collected for these tickets?

- A \$4500
- B \$5400
- C \$6300
- D \$9000

Two race cars travel at a constant rate. The slower car is traveling at 163 miles per hour and completes 47 laps while the faster car completes 50 laps during the same time. Which is a reasonable estimate of the speed of the faster car?

- A Between 165 mph and 170 mph
- B Between 170 mph and 175 mph
- C Between 175 mph and 180 mph
- D Between 180 mph and 185 mph

Larry bought 6 CDs priced \$29.95 each. A sales tax of 8% was charged on the purchase. Which is the best estimate of the total amount Larry paid, including tax?

- A \$30
- B \$60
- C \$70
- D \$190

A garden center received a shipment of 96 shrubs. The original order was for 120 shrubs. What percent of the order did not arrive?

- A 15%
- B 20%
- C 25%
- D 80%

Ricardo bought a jacket priced at \$39.99. The total cost of the jacket, including sales tax, was \$43.29. What was the sales tax rate to the nearest hundredth of a percent?

- A 3.30%
- B 7.62%
- C 8.25%
- D 10.83%

The six weeks math test had 50 questions. 30% of the questions were matching questions and of the remaining questions 20% were multiple choice questions. How many of the test questions were multiple choice?

- A 15
- B 18
- C 7
- D 9

The student is expected to estimate and find solutions to application problems involving percents and other proportional relationships such as rates and similarity.

Frank wanted to buy a shirt that was marked \$15. The sales tax on the shirt was \$1.20. What was the rate of sales tax?

- A $6\frac{2}{3}\%$
- B 8%
- C $12\frac{1}{2}\%$
- D 18%

A security guard observed that about 18% of the 600 cars in the parking lot at a movie theater were from out of state. Which is the best estimate of the number of out of state cars in the parking lot?

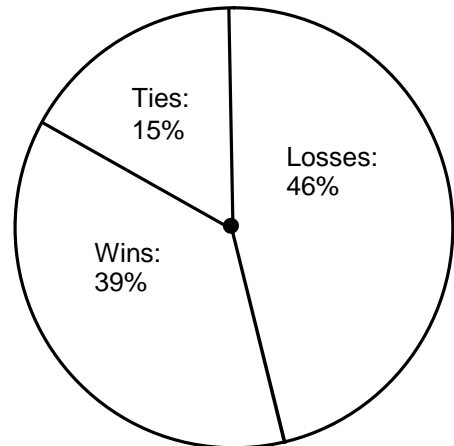
- A 400
- B 200
- C 120
- D 12

A recipe for oatmeal cookies requires 3.5 cups of flour. This recipe will make 4 dozen cookies. Mrs. Smith needs to make 6 dozen cookies. How much flour will she need for that amount of cookies?

- A 4 cups
- B 4.5 cups
- C 5 cups
- D 5.25 cups

The circle graph shows the win-loss-tie relationship for the Sabre's hockey team in 1991-1992.

Sabre's Hockey Record for 1991-1992



Which is the best estimate of the number of ties if they played a total of 80 games?

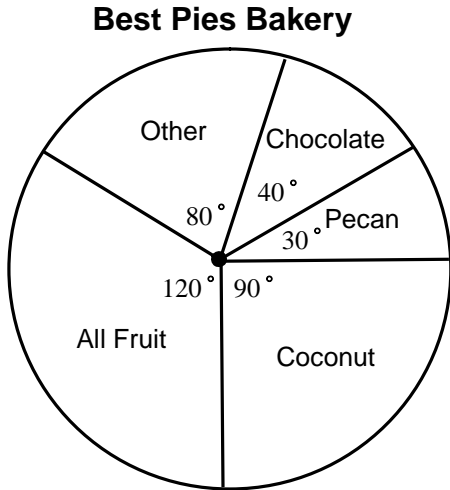
- A 12
- B 15
- C 31
- D 39

Jimmy's assignment was to draw three rectangles whose lengths and widths had a ratio of 3:2. Which of the following dimensions should he *not* use for one of his rectangles?

- A length: 15
width: 10
- B length: 24
width: 16
- C length: 9
width: 4
- D length: 18
width: 12

The student is expected to estimate and find solutions to application problems involving percents and other proportional relationships such as rates and similarity.

The manager of Best Pies Bakery constructed a circle graph to represent his monthly sales. The central angle measures are shown on the graph.



Which table identifies the percent of pies, rounded to the nearest tenth of a percent, represented by each sector?

A

Kind of Pie	Percent
Pecan	30%
Coconut	90%
All Fruit	120%
Chocolate	40%
Others	80%

B

Kind of Pie	Percent
Pecan	.83%
Coconut	.40%
All Fruit	.33%
Chocolate	.11%
Others	.22%

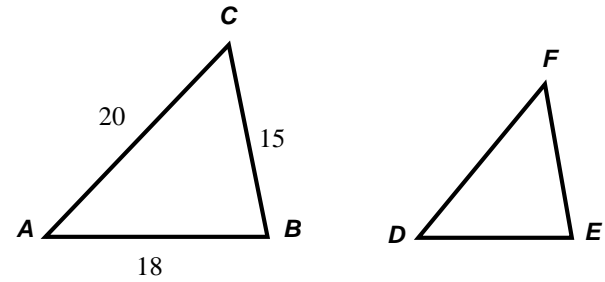
C

Kind of Pie	Percent
Pecan	8.3%
Coconut	25%
All Fruit	33.3%
Chocolate	11.1%
Others	22.2%

D

Kind of Pie	Percent
Pecan	8.3%
Coconut	25%
All Fruit	33.3%
Chocolate	22.2%
Others	11.1%

$\triangle ABC$ and $\triangle DEF$ are similar triangles.



If the ratio of the side lengths of $\triangle DEF$ to the side lengths of $\triangle ABC$ is 3:5, what is the length of the longest side of $\triangle DEF$?

- A 25
- B 12
- C 10
- D 8

The six weeks test in Algebra I had 20 simplifying questions and 10 factoring questions. Johnny got 75% of the simplifying and 80% of the factoring questions correct. How many questions did he answer correctly?

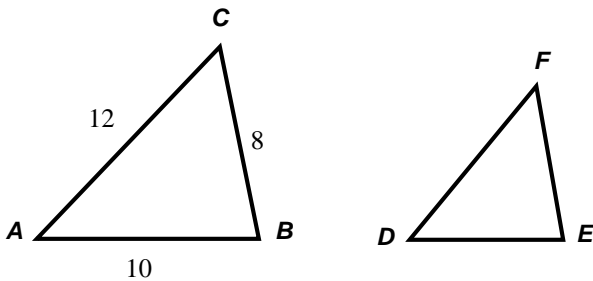
- A 25
- B 23
- C 16
- D Not Here

A cheetah can run an average of 50 miles per hour but for only a short amount of time. If a cheetah ran this rate for 2 minutes, about how many yards did the cheetah run?

- A Between 1000 and 2000 yards
- B Between 2000 and 3000 yards
- C Between 3000 and 4000 yards
- D More than 4000 yards

The student is expected to estimate and find solutions to application problems involving percents and other proportional relationships such as rates and similarity.

$\triangle ABC$ and $\triangle DEF$ are similar triangles.



If the side lengths of $\triangle DEF$ are 60% of the side lengths of $\triangle ABC$, what is the length of the shortest side of $\triangle DEF$?

- A 9.6
- B 6.4
- C 4.8
- D Not here

A television that normally cost \$850.00 is on sale for 30% off. What is the sale price of the television?

- A \$255.00
- B \$495.00
- C \$595.00
- D \$820.00

The Smithson family estimates they will spend \$570 a month on groceries. If this amount represents 15% of the total Smithson family monthly income, how much is their monthly income?

- A \$2800
- B \$3800
- C \$4000
- D \$4200

Marilyn went on a 4-month plan to increase her overall physical and mental health. When she started the plan she weighed 200 pounds. During the first 2 months she dieted and jogged and she lost a total of 8% of her weight. During the last 2 months, she dieted, did yoga and also swam every day. During these 2 months she lost 8 pounds. What was her weight at the end of the 4 months?

- A 184 pounds
- B 176 pounds
- C 174 pounds
- D 168 pounds

If my new watch loses 1.5 minutes every 8 hours, how much time will it lose in one week?

- A 12 minutes
- B 10.5 minutes
- C 31.5 minutes
- D 56 minutes

Leroy earns a 5% commission on the total sales he makes each week. If last week his commission was \$362.50, what were his sales for the week?

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

				.			
0	0	0	0		0	0	0
1	1	1	1		1	1	1
2	2	2	2		2	2	2
3	3	3	3		3	3	3
4	4	4	4		4	4	4
5	5	5	5		5	5	5
6	6	6	6		6	6	6
7	7	7	7		7	7	7
8	8	8	8		8	8	8
9	9	9	9		9	9	9