



**SOUTH
PIEDMONT**
COMMUNITY COLLEGE

Placement Test Study Guide

L.L. Polk Campus
Garibaldi Building, Room 265
704-272-5338
testing@spcc.edu

Old Charlotte Highway Campus
Building B, Room 190
704-290-5841
testing@spcc.edu

Purpose of Placement Testing

The purpose of South Piedmont Community College's placement test is to enhance student success. SPCC's placement test is designed by the College Board to assess your skill levels in English and math. The test has five sections: reading comprehension, sentence skills, computer proficiency, arithmetic, and algebra. Each section will determine a student's skills and with advisor and/or counselor guidance, will enable the student to start in the appropriate courses for their curriculum. While the test is not timed, students should allot two hours for completion.

Testing Center Schedule

SPCC has two Testing Centers for your convenience:

L.L. Polk Campus
Garibaldi Building, Room 265
704-272-5338

Old Charlotte Highway Campus
Building B, Room 190
704-290-5841

Placement testing is available as listed on the Testing Center calendars on our website. Normal testing hours are 8:00 a.m. – 5:00 p.m. Every Tuesday the LLP testing center is open from 10:30 a.m. – 8:00 p.m. and every Thursday the OCH testing center is open from 10:30 a.m. – 8:00 p.m. Testing priority will be given to students with appointments. Walk-ins will be accommodated if space allows.

All students must show a picture ID or other acceptable identification with photo and signature and complete an application for admission to SPCC before testing.

Placement test scores are valid for two years. Applicants who have completed a bachelor's degree or higher, applicants transferring in English, math, and computer classes from another institution, SAT, ACT, ASSET, or COMPASS scores taken within the last two years may be eligible for exemption. It is the responsibility of the student to request official transcripts, SAT, ACT, ASSET, COMPASS, or CLEP scores to be sent to SPCC.

- SAT = 500 Critical Reading
- SAT = 500 Mathematics
- ACT = 21 Reading and English
- ACT = 21 Mathematics
- ASSET = 41 Reading and 41 Writing
- ASSET = 41 Numerical and 41 Intermediate Algebra

- COMPASS = 81 Reading and 70 Writing
- COMPASS = 47 Pre-Algebra and 66 Algebra

Test Administration

Allow two hours to complete the placement test. Testing is administered on a computer and you will be provided scrap paper and pencils to work out problems. Our Testing Specialist are available every step of the way if you have questions!

Test Regulations

Cell phones, electronic devices, purses, book bags, textbooks, notebooks, dictionaries, calculators, or other papers are not allowed in the testing room. Other students will be testing at the same time and you may not talk to each other for any reason. **Talking with anyone other than the Testing Specialist may result in cancellation of your scores.** When you have completed the test all paper and pencils provided to you will be collected. Testing materials may not be removed from the Testing Center.

Confidentiality

Your test scores and the information you provide when taking the tests will be used by SPCC for advising and placement purposes. It may also be used by SPCC and the College Board for research purposes. If data is used for research purposes, your identity will be kept confidential. If you have any questions about the confidentiality of your data, please talk with the Assistant Director, Admissions and Testing at 704-290-5847.

Special Arrangements for Students with Disabilities

If you have a disability (permanent or temporary) that will affect taking the tests under standard conditions, you should inform the Testing Specialist **before** taking the test. Reasonable accommodations will be provided with appropriate documentation of disability. Please talk with a member of the Counseling department for more information.

Guessing

You **must** answer every question when it is first given. **Questions may not be skipped without submitting an answer.** You may change your answer on a particular question before continuing onto the next question. However, once you submit an answer, it has been accepted and scored and cannot be changed. If you do not know the answer to a question, try to eliminate one or more of the choices that do not seem reasonable and then pick one of the remaining choices.

Descriptions of the Tests

(Adapted from ACCUPLACER information, www.collegeboard.org)

Reading Comprehension – 20 questions, with two types:

*The first type consists of a reading passage followed by a question based on the text. Both short and long passages are provided. The reading passages can also be classified according to the kind of information processing required including explicit statements related to the main idea, explicit statements related to a secondary idea, application, and inference.

*The second type of question, sentence relationships, presents two sentences followed by a question about the relationship between these two sentences. The question may ask, for example, if the statement in the second sentence supports that in the first, if it contradicts it, or if it repeats the same information.

Sentence Skills – 20 questions, with two types:

*The first type is **sentence correction** questions that require an understanding of sentence structure. These questions ask you to choose the most appropriate word or phrase to substitute for the underlined portion of the sentence.

*The second type is **construction shift** questions. These questions ask that a sentence be rewritten according to the criteria shown while maintaining essentially the same meaning as the original sentence.

Within these two primary categories, the questions are also classified according to the skills being tested. Some questions deal with the logic of the sentence, others with whether or not the answer is a complete sentence, and still others with the relationship between coordination and subordination.

Computer Skills – 15 questions

This test measures your current knowledge of Windows-based basic computer terminology and usage skills. Questions in this test relate to keyboard/mouse functions, operating system functions (Control Panel, cut/paste, etc.), file organization (such as My Documents), external file storage, and terms/functions in Microsoft Office software.

Math Diagnostic and Placement Test – The math DAP measures proficiency in eight content areas. The eight content areas are:

Operations with Integers

- Problem events that require the use of integers and integer operations
- Basic exponents, square roots, and order of operations
- Perimeter and area of rectangles and triangles
- Angle facts and the Pythagorean Theorem

Fractions and Decimals

- Relationships between fractions and decimals
- Problem events that result in the use of fractions and decimals to find a solution
- Operations with fractions and decimals
- Circumference and area of circles
- The concept of π
- Application problems involving decimals

Proportions, Ratios, Rates, and Percentages

- Conceptual application problems containing ratios, rates, proportions, and percentages
- Applications using U.S. customary and metric units of measurement
- Geometry of similar triangles

Expressions, Linear Equations, and Linear Inequalities

- Graphical and algebraic representations of linear expressions, equations, and inequalities
- Application problems using linear equations and inequalities

Graphs and Equations of Lines

- Graphical and algebraic representations of lines
- Interpretation of basic graphs (line, bar, circle, etc.)

Polynomials and Quadratic Applications

- Graphical and algebraic representations of quadratics
- Finding algebraic solutions to contextual quadratic applications
- Polynomial operations
- Factoring polynomials
- Applying factoring to solve polynomial equations

Rational Expressions and Equations

- Graphical and algebraic representations of rational equations
- Finding algebraic solutions to contextual rational applications
- Identifying and simplifying rational expressions

Radical Expressions and Equations

- Manipulating radicals to solve real-world applications involving radical equations
- Simplifying and performing operations with radical expressions and rational exponents

Preparation for Placement Testing

SPCC will use your scores from the placement test to enroll you in appropriate classes. It is essential that you do your best!

We urge you to use this study guide to prepare yourself for the actual test. You will find sample questions and answers for each section below, as well as some helpful test-taking tips along the way. You may also want to check out the websites directly below for additional help in preparing for this important test*!

www.number2.com (SAT/ACT prep site)

www.testprepreview.com (sample questions)

www.math.com (tutorial and sample questions)

www.studyguidezone.com (with helpful test-taking tips)

www.khanacademy.org (math tutorial site)

Academic Support Center Services:

The Academic Support Center provides studying assistance for the college placement test. These services are available at no charge on the Old Charlotte Highway and L.L. Polk campuses.

Hours of operation vary. Contact the Academic Support Center for operating hours. The ASC is located in building A, room 155, on the OCH campus and can be reached at 704-290-5239. The ASC is located on the OCH campus in Building A, Room 155 or 704-290-5239 and on the L.L. Polk campus in Horne Library, Room 130 or 704-272-5440.

Academic Support services offered are math, writing commons, skills tutoring, information technology, natural science, and business and/or accounting.

Tips for doing your best:

Above all, RELAX! This test is designed to help you succeed in college. Your scores will help you and your advisor determine which courses are most appropriate for your current skill level.

1. Plan to arrive a few minutes early so you can locate the testing center, restrooms, etc., before you begin.
2. Pay careful attention to all directions and make sure you understand them before you begin each test.
3. **Remember to bring a picture I.D. Students who do not bring a proper ID will not be allowed to test at their appointed time.**

**We look forward to your enrollment here at
South Piedmont Community College!**

*A list of tutorial websites is provided for your convenience. Please note that SPCC holds no responsibility for the content of any third-party website.

Reading Comprehension Sample Questions

Directions for questions 1-6

Read the statement or passage and then choose the best answer to the question. Answer the question based on what is stated or implied in the statement or passage.

- 1: In the words of Thomas DeQuincey, "It is notorious that the memory strengthens as you lay burdens upon it." If, like most people, you have trouble recalling the names of those you have just met, try this: The next time you are introduced, plan to remember the names. Say to yourself, "I'll listen carefully; I'll repeat each person's name to be sure I've got it, and I will remember." You'll discover how effective this technique is and probably recall those names for the rest of your life.

The main idea of the paragraph maintains that the memory

- A. always operates at peak efficiency.
 - B. breaks down if under great strain.
 - C. improves if it is used often.
 - D. becomes unreliable if it tires.
- 2: Unemployment was the overriding fact of life when Franklin D. Roosevelt became president of the United States on March 4, 1933. An anomaly of the time was that the government did not systematically collect statistics of joblessness; actually, it did not start doing so until 1940. The Bureau of Labor Statistics later estimated that 12,830,000 persons were out of work in 1933, about one-fourth of a civilian labor force of more than 51 million.

Roosevelt signed the Federal Emergency Relief Act on May 12, 1933. The president selected Harry L. Hopkins, who headed the New York relief program, to run FERA. A gifted administrator, Hopkins quickly put the program into high gear. He gathered a small staff in Washington and brought the state relief organizations into the FERA system. While the agency tried to provide all the necessities, food came first. City dwellers usually got an

allowance for fuel, and rent for one month was provided in case of eviction.

This passage is primarily about

- A. unemployment in the 1930s.
 - B. the effect of unemployment on United States families.
 - C. President Franklin D. Roosevelt's presidency.
 - D. President Roosevelt's FERA program.
- 3: It is said that a smile is universally understood. And nothing triggers a smile more universally than the taste of sugar. Nearly everyone loves sugar. Infant studies indicate that humans are born with an innate love of sweets. Based on statistics, a lot of people in Great Britain must be smiling because on average, every man, woman, and child in that country consumes 95 pounds of sugar each year.

From this passage it seems safe to conclude that the English

- A. do not know that too much sugar is unhealthy.
 - B. eat desserts at every meal.
 - C. are fonder of sweets than most people.
 - D. have more cavities than any other people.
- 4: With varying success, many women around the world today struggle for equal rights. Historically, women have achieved greater equality with men during periods of social adversity. The following factors initiated the greatest number of improvements for women: violent revolution, world war, and the rigors of pioneering in an undeveloped land. In all three cases, the essential element that improved the status of women was a shortage of men, which required women to perform many of society's vital tasks.

We can conclude from the information in this passage that

- A. women today are highly successful in winning equal rights.
- B. only pioneer women have been considered equal to men.

- C. historically, women have only achieved equality through force.
- D. historically, the principle of equality alone has not been enough to secure women equal rights.

5: In 1848, Charles Burton of New York City made the first baby carriage, but people strongly objected to the vehicles because they said the carriage operators hit too many pedestrians. Still convinced that he had a good idea, Burton opened a factory in England. He obtained orders for the baby carriages from Queen Isabella II of Spain, Queen Victoria of England, and the Pasha of Egypt. The United States had to wait another ten years before it got a carriage factory, and only 75 carriages were sold in the first year.

Even after the success of baby carriages in England,

- A. Charles Burton was a poor man.
- B. Americans were still reluctant to buy baby carriages.
- C. Americans purchased thousands of baby carriages.
- D. the United States bought more carriages than any other country.

6: All water molecules form six-sided structures as they freeze and become snow crystals. The shape of the crystal is determined by temperature, vapor, and wind conditions in the upper atmosphere. Snow crystals are always symmetrical because these conditions affect all six sides simultaneously.

The purpose of this passage is to present

- A. a personal observation.
- B. a solution to a problem.
- C. actual information.
- D. opposing scientific theories.

Directions for questions 7-10

For the questions that follow, two underlined sentences are followed by a question or statement. Read the sentences, then choose the best answer to the question or the best completion of the statement.

7: The Midwest is experiencing its worst drought in fifteen years.

Corn and soybean prices are expected to be very high this year.

What does the second sentence do?

- A. It restates the idea found in the first.
- B. It states an effect.
- C. It gives an example.
- D. It analyzes the statement made in the first.

8: Social studies classes focus on the complexity of our social environment.

The subject combines the study of history and the social sciences and promotes skills in citizenship.

What does the second sentence do?

- A. It expands on the first sentence.
- B. It makes a contrast.
- C. It proposes a solution.
- D. It states an effect.

9: Knowledge of another language fosters greater awareness of cultural diversity among the peoples of the world.

Individuals who have foreign language skills can appreciate more readily other peoples' values and ways of life.

How are the two sentences related?

- A. They contradict each other.
- B. They present problems and solutions.
- C. They establish a contrast.
- D. They repeat the same idea.

10: Serving on a jury is an important obligation of citizenship.

Many companies allow their employees paid leaves of absence to serve on juries.

What does the second sentence do?

- A. It reinforces what is stated in the first.
- B. It explains what is stated in the first.
- C. It expands on the first.
- D. It draws a conclusion about what is stated in the first.

Sentence Skills Sample Questions

Directions for questions 1-5

Select the best version of the underlined part of the sentence. The first choice is the same as the original sentence. If you think the original sentence is best, choose the first answer.

- 1: Stamp collecting being a hobby that is sometimes used in the schools to teach economics and social studies.
- A. being a hobby that is
 - B. is a hobby because it is
 - C. which is a hobby
 - D. is a hobby
- 2: Knocked sideways, the statue looked as if it would fall.
- A. Knocked sideways, the statue looked
 - B. The statue was knocked sideways, looked
 - C. The statue looked knocked sideways
 - D. The statue, looking knocked sideways,
- 3: To walk, biking, and driving are Pat's favorite ways of getting around.
- A. To walk, biking, and driving
 - B. Walking, biking, and driving
 - C. To walk, biking, and to drive
 - D. To walk, to bike, and also driving
- 4: When you cross the street in the middle of the block, this is an example of jaywalking.
- A. When you cross the street in the middle of the block, this
 - B. You cross the street in the middle of the block, this
 - C. Crossing the street in the middle of the block
 - D. The fact that you cross the street in the middle of the block
- 5: Walking by the corner the other day, a child, I noticed, was watching for the light to change.
- A. a child, I noticed, was watching
 - B. I noticed a child watching
 - C. a child was watching, I noticed
 - D. there was, I noticed, a child watching

Directions for questions 6-10

Rewrite the sentence in your head following the directions given below. Keep in mind that your new sentence should be well written and should have essentially the same meaning as the original sentence.

- 6: It is easy to carry solid objects without spilling them, but the same cannot be said of liquids.

Rewrite, beginning with
Unlike liquids,

The next words will be

- A. it is easy to
- B. we can easily
- C. solid objects can easily be
- D. solid objects are easy to be

- 7: Although the sandpiper is easily frightened by noise and light, it will bravely resist any force that threatens its nest.

Rewrite, beginning with
The sandpiper is easily frightened by noise and light,

The next words will be

- A. but it will bravely resist
- B. nevertheless bravely resisting
- C. and it will bravely resist
- D. even if bravely resisting

- 8: If he had enough strength, Todd would move the boulder.

Rewrite, beginning with
Todd cannot move the boulder

The next words will be

- A. when lacking
- B. because he
- C. although there
- D. without enough

- 9: The band began to play, and then the real party started.

Rewrite, beginning with
The real party started

The next words will be
A. after the band began
B. and the band began
C. although the band began
D. the band beginning

- 10: Chris heard no unusual noises when he listened in the park.

Rewrite, beginning with
Listening in the park,

The next words will be
A. no unusual noises could be heard
B. then Chris heard no unusual noises
C. and hearing no unusual noises
D. Chris heard no unusual noises

Answers to Sample Questions

*Note: All sample questions provided by the College Board website.

Reading Comprehension

- | | | | |
|----|---|-----|---|
| 1. | C | 6. | C |
| 2. | D | 7. | B |
| 3. | C | 8. | A |
| 4. | D | 9. | D |
| 5. | B | 10. | A |

Sentence Skills

- | | | | |
|----|---|-----|---|
| 1. | D | 6. | C |
| 2. | A | 7. | A |
| 3. | B | 8. | B |
| 4. | C | 9. | A |
| 5. | B | 10. | D |

*****For additional study help, check out the websites listed in the study guide under "Preparation for Placement Testing!"***

Operations with Integers

For each of the questions below, choose the best answer from the four choices given. You may use the paper you received as scratch paper.

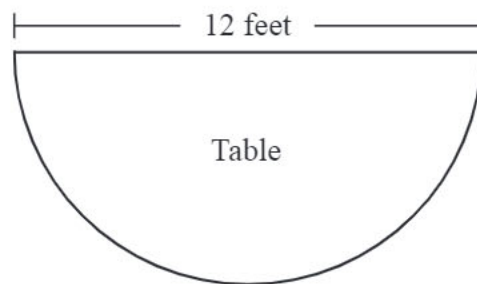
1. On a summer day in Benton, the low temperature of 75°F was reached at 6 in the morning. The high temperature was reached 9 hours later, after the temperature rose 16°F . What was the high temperature in Benton that day?
- A. 81°F
B. 84°F
C. 91°F
D. 96°F



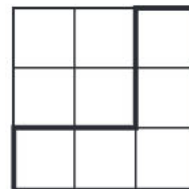
2. Which of the four labeled points on the number line above has the greatest absolute value?
- A. A
B. B
C. C
D. D
3. $(-2 - 4) \times 8 =$
- A. -48
B. -16
C. 16
D. 48
4. The sum of Cheryl's scores on the first four quizzes in her history class was 364 points. If she scores 96 points on her next quiz, what will be her average score for the five quizzes?
- A. 89 points
B. 91 points
C. 92 points
D. 94 points
5. $\sqrt{529} =$
- A. 17
B. 23
C. 26
D. 27

Fractions and Decimals

For each of the questions below, choose the best answer from the four choices given. You may use the paper you received as scratch paper.



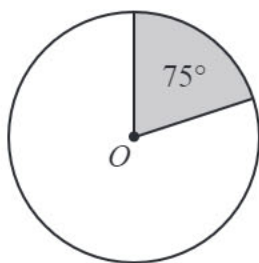
1. A large dining room table is in the shape of a semicircle of diameter 12 feet, as shown above. Of the following, which is closest to the area of the table? (Use $\pi = 3.14$.)
- A. 38 square feet
B. 57 square feet
C. 75 square feet
D. 113 square feet



2. The large square above has area 9 and is divided into 9 smaller squares of equal area. What is the length of the path drawn in bold?
- A. 3
B. 4
C. 5
D. 6
3. $0.6 \div 10^{-2} =$
- A. 60
B. 6
C. 0.06
D. 0.006

4. $3,590 =$

- A. 3.59×10^5
- B. 3.59×10^4
- C. 3.59×10^3
- D. 3.59×10^2



5. The circle above has center O . The fraction of the area of the circle that is shaded represents a value on the number line between

- A. $\frac{2}{25}$ and $\frac{3}{25}$
- B. $\frac{3}{25}$ and $\frac{4}{25}$
- C. $\frac{4}{25}$ and $\frac{5}{25}$
- D. $\frac{5}{25}$ and $\frac{6}{25}$

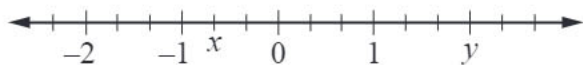
Proportions, Ratios, Rates and Percentages

For each of the questions below, choose the best answer from the four choices given. You may use the paper you received as scratch paper.

- During a basketball practice, two players, Sidell and Jeron, each attempted 25 free throws. Sidell made 40% of his free-throw attempts, whereas Jeron made 52% of them. How many more free-throws did Jeron make than Sidell?
 - A. 3
 - B. 4
 - C. 5
 - D. 6
- A boy skis 4 miles down a mountain slope in 10 minutes. What is his average speed, in miles per hour (mph), over that time interval?
 - A. 48 mph
 - B. 36 mph
 - C. 32 mph
 - D. 24 mph
- There are 23 children in a line to buy a hot dog. If every 4th child in line, starting with the fourth in line, gets a toy, what is the ratio of the number of children in line who get a toy to the number of children in line who do not get a toy?
 - A. 3:8
 - B. 5:23
 - C. 5:18
 - D. 6:23
- 52 is what percent of 160?
 - A. 30%
 - B. 32.5%
 - C. 35%
 - D. 38.5%
- Jenna is driving at a speed of 65 miles per hour. What is Jenna's driving speed in kilometers per hour? (There are about 1.6 kilometers in 1 mile.)
 - A. 112 kilometers per hour
 - B. 104 kilometers per hour
 - C. 96 kilometers per hour
 - D. 92 kilometers per hour

Expressions, Linear Equations and Linear Inequalities

For each of the questions below, choose the best answer from the four choices given. You may use the paper you received as scratch paper.



1. The tick marks on the number line above are equally spaced. The expression $y^2 + 2x$ is equal to

- A. $-\frac{8}{3}$
- B. 0
- C. $\frac{8}{3}$
- D. $\frac{16}{3}$

2. A party supply store charges an initial charge of \$20 to rent a costume plus an additional \$8 per day for each day the costume is rented. Which of the following represents the cost, in dollars, to rent a costume for n days?

- A. $8n$
- B. $20 + 8n$
- C. $(20)(8n)$
- D. $20 - 8n$

3. Julie purchased a treadmill that originally cost t dollars at a discount of 8%. Which of the following represents the amount, in dollars, that Julie paid for the treadmill after the discount?

- A. $t - 0.8t$
- B. $t + 0.08$
- C. $t + 0.08t$
- D. $t - 0.08t$

4. A long distance cell phone service offers a plan that costs \$20 per month plus \$0.40 per minute of use. Which of the following represents the total cost of this service for a month in which n minutes were used?

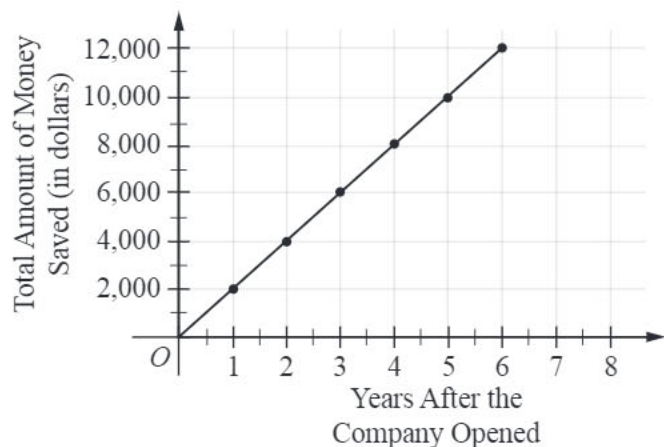
- A. $(20)(0.04n)$
- B. $20.40n$
- C. $20 + .4n$
- D. $20 + 4n$

5. If $\frac{x}{3} - 2 = 5x - 2$, then $x =$

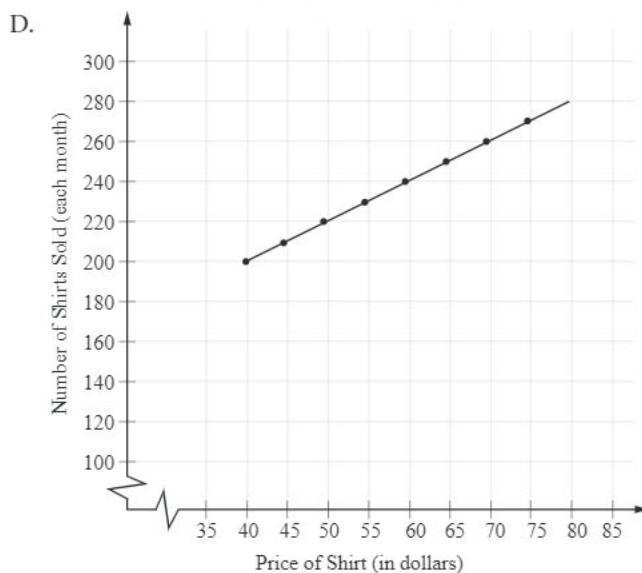
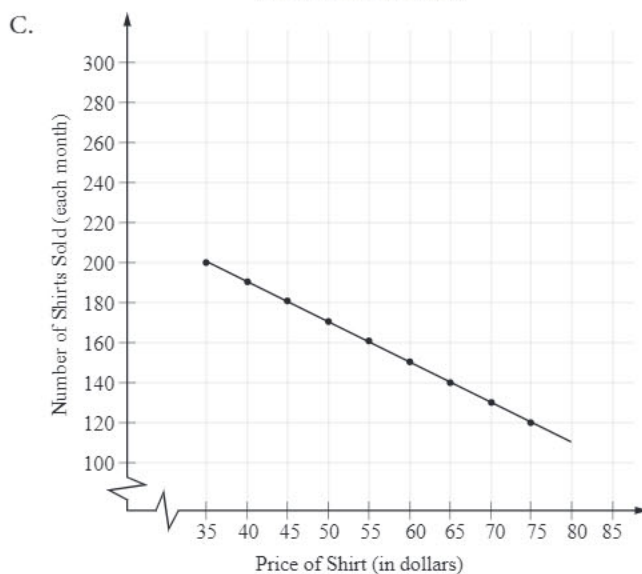
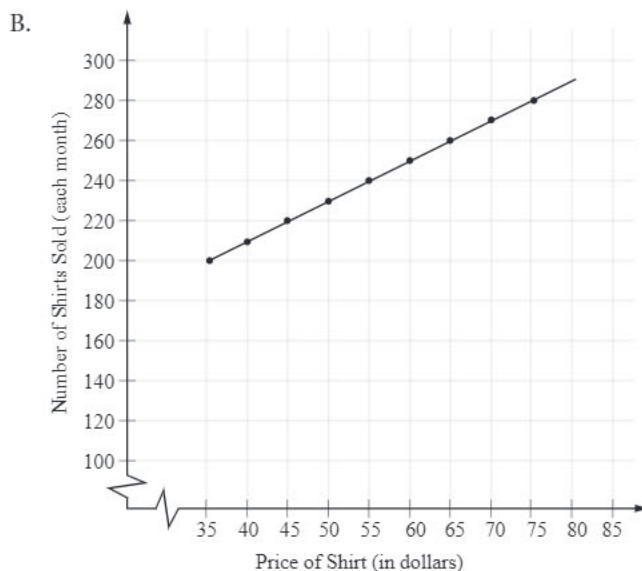
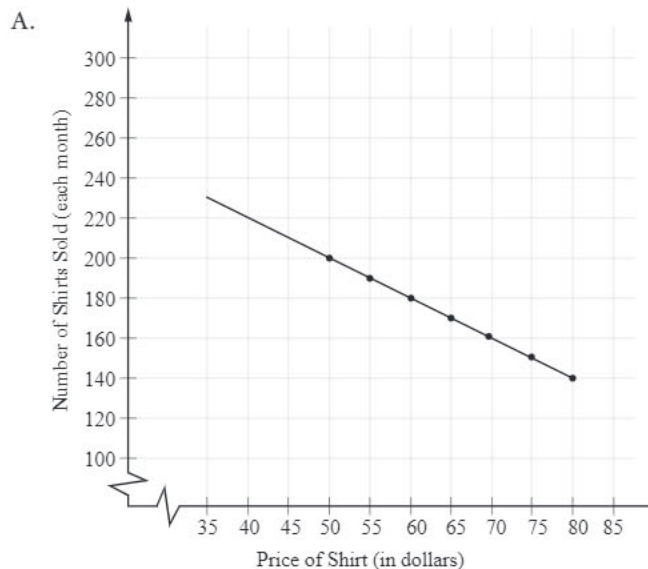
- A. $-\frac{3}{5}$
- B. 0
- C. $\frac{5}{3}$
- D. 15

Graphs and Equations of Lines

For each of the questions below, choose the best answer from the four choices given. You may use the paper you received as scratch paper.



- The linear equation graphed above gives the amount of money Company H has saved y years after the company opened. According to the graph, how many years after the company opened did they save \$10,000?
 - 1
 - 4
 - 5
 - 6
- Anita's department store determined that if a specific shirt is priced at \$50 each, on average there would be 200 shirts sold each month the shirt is available for sale. The number of shirts sold per month would decrease by 10 for each \$5 of increase in the price. If p presents the price of the shirt, in dollars, and s represents the average number of shirts sold per month, which of the following graphs best represents the relationship between p and s ?

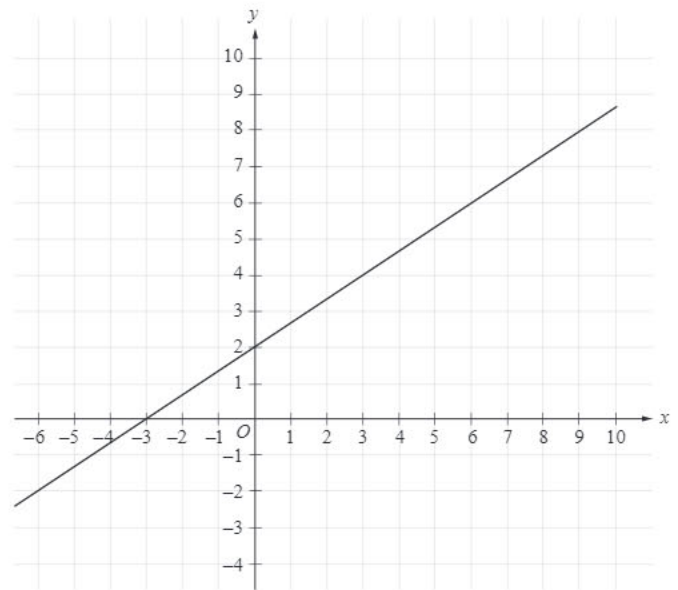


3. A computer help-service charges an initial fee to join the service plus an additional charge for each hour of help-service a customer uses. If the computer service company charges a total of \$140 for the initial fee and a 2-hour help session and a total of \$220 for the initial fee and a 4-hour help session, which of the following expressions gives the computer company's charge for each hour of help-service that a customer uses?

- A. $\frac{\$220 - \$140}{4 - 2}$
 B. $\frac{\$220 + \$140}{4 + 2}$
 C. $\frac{4 - 2}{\$220 - \$140}$
 D. $\frac{4 + 2}{\$220 + \$140}$

4. Jen scored 16 points in a new card game, where each player could receive either 2 or 4 points in each round. If Jen received x amount of 2 point scores, and y amount of 4 point scores, what does the x -intercept of the graph in the xy -plane of the equation $2x + 4y = 16$ indicate?

- A. Jen scored 2 points in 8 rounds and she didn't score 4 points in any round.
 B. Jen scored 2 points in 2 rounds and 4 points in 3 rounds.
 C. Jen scored 2 points in 4 rounds and 4 points in 2 rounds.
 D. Jen didn't score 2 points in any round, but she scored 4 points in 4 rounds.

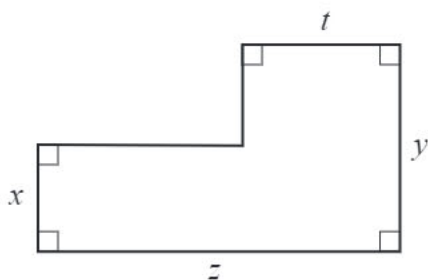


5. Which of the following is true about the line graphed in the xy -plane above?

- A. The line has slope $\frac{2}{3}$ and y -intercept -3 .
 B. The line has slope $\frac{2}{3}$ and y -intercept 2.
 C. The line has slope $\frac{3}{2}$ and y -intercept -3 .
 D. The line has slope $\frac{3}{2}$ and y -intercept 2.

Polynomials and Quadratic Applications

For each of the questions below, choose the best answer from the four choices given. You may use the paper you received as scratch paper.



1. All of the line segments in the figure above meet at right angles, and the lengths of four of the six sides are given. Which of the following represents the area of the figure, in terms of x , t , y , and z ?

- A. $yz - xt$
- B. $xz + ty$
- C. $xz - xt + ty$
- D. $xz + xt + ty$

2. $(xy^3z^4)(x^{-4}y^{-3}z^{-1}) =$

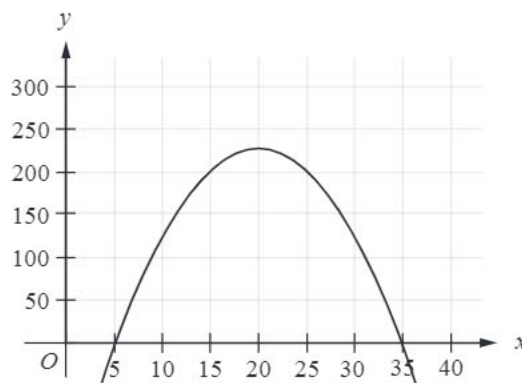
- A. $\frac{z}{x}$
- B. $\left(\frac{z}{x}\right)^3$
- C. $y\left(\frac{z}{x}\right)$
- D. $y\left(\frac{z}{x}\right)^3$

3. $\left(\frac{a}{2} - b\right)^2$

- A. $\frac{a^2}{2} - ab + b^2$
- B. $\frac{a^2}{2} - 2ab + b^2$
- C. $\frac{a^2}{4} - ab + b^2$
- D. $\frac{a^2}{4} - 2ab + b^2$

4. If $x^2 - 3x - 18 = 0$, which of the following is a possible value for x ?

- A. -6
- B. 3
- C. 6
- D. 9



5. The function $f(x) = -x^2 + 40x - 175$ is graphed in the xy -plane above. For what value of x is the value of $f(x)$ greatest?

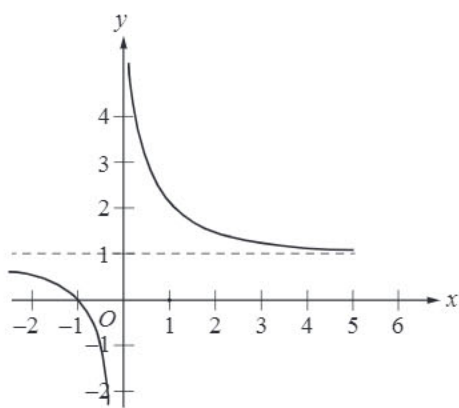
- A. 5
- B. 20
- C. 30
- D. 35

Rational Expressions and Equations

For each of the questions below, choose the best answer from the four choices given. You may use the paper you received as scratch paper.

1. Kayla is going to bike the entire length of a 90-mile scenic bike path. She will take a 1-hour break during her ride. If Kayla's average speed while biking is s miles per hour, how many hours will it take from the time she leaves the start of the bike path until she reaches the end of the bike path?

- A. $\frac{90}{s-1}$
B. $\frac{90}{s+1}$
C. $\frac{90}{s}-1$
D. $\frac{90}{s}+1$



2. Which of the following could be an equation of the function graphed in the xy -plane above?

- A. $y = \frac{1}{x}$
B. $y = \frac{1}{x} + 1$
C. $y = \frac{1}{x-1}$
D. $y = \frac{1}{x+1}$

3. $(x+9)\left(\frac{1}{x^2+2x-63}\right) =$

- A. $x-7$
B. $x+7$
C. $\frac{1}{x-7}$
D. $\frac{1}{x+7}$

4. $\frac{1}{y} + \frac{1}{y^2} =$

- A. $\frac{1}{y^2+y}$
B. $\frac{2}{y^2+y}$
C. $\frac{y+1}{y^2}$
D. $\frac{2y+1}{y^2}$

5. If $\frac{1}{x+1} + \frac{3}{x-3} = \frac{8}{x^2-2x-3}$, then $x =$

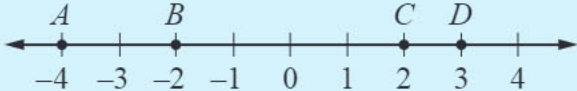
- A. $-\frac{1}{2}$
B. 0
C. $\frac{3}{2}$
D. 2

Radical Expressions and Equations

For each of the questions below, choose the best answer from the four choices given. You may use the paper you received as scratch paper.

1. The formula $v = \sqrt{30fd}$ is used to estimate the speed v , in miles per hour, a car was traveling if it skids d feet after the application of its brakes. The number f is a coefficient that measures the “slipperiness” of the road. If a car skids 55 feet and $f = 0.9$, how fast was the car traveling when its brakes were applied? (Round your answer to the nearest tenth of a mile per hour.)
 - A. 38.5 mph
 - B. 42.6 mph
 - C. 45.0 mph
 - D. 48.5 mph
2. $(49x)^{-\frac{1}{2}} =$
 - A. $-7\sqrt{x}$
 - B. $\frac{7}{\sqrt{x}}$
 - C. $\frac{1}{7\sqrt{x}}$
 - D. $\frac{1}{49\sqrt{x}}$
3. $\sqrt{27} + \sqrt{300} =$
 - A. $3\sqrt{3} + 10$
 - B. $3\sqrt{103}$
 - C. $9(\sqrt{3} + 10)$
 - D. $13\sqrt{3}$
4. If x and y are positive numbers, then $(\sqrt{x^5y})(\sqrt{x^{-3}y^{-1}}) =$
 - A. x
 - B. xy
 - C. x^2y
 - D. $\frac{x}{y}$
5. If $\sqrt{x^2 - 3x - 10} = x - 2$, what is the value of x ?
 - A. 12
 - B. 14
 - C. 16
 - D. 20

Answer Key

Operations with Integers		
Question Number	Correct Answer	Rationale
1	C	Choice (C) is correct. The low temperature of 75°F was reached at 6 in the morning, and the high temperature was 16°F higher. So the high temperature in Benton that day was $75^{\circ}\text{F} + 16^{\circ}\text{F} = 91^{\circ}\text{F}$.
2	A	 <p>Choice (A) is correct. The absolute value of point A is $-4 = 4$. The absolute values of points C and D, respectively, are $-2 = 2$, $2 = 2$ and $3 = 3$. Therefore, of the four labeled points, point A has the greatest absolute value.</p>
3	A	Choice (A) is correct. The value of $-2 - 4$ is $-2 + (-4) = -6$. Therefore, $(-2 - 4) \times 8 = -6 \times 8 = -48$.
4	C	Choice (C) is correct. Cheryl's average score for the five quizzes will be the sum of the scores divided by 5, the number of quizzes. She scored a total of 364 points on the first four quizzes, and if she scores 96 points on her next quiz, the sum of the scores will be $364 + 96 = 460$ points. Therefore, her average score for the five quizzes will be $460 \div 5 = 92$ points.
5	B	Choice (B) is correct. The square root of 529, denoted $\sqrt{529}$, is 23, because $23^2 = 23 \times 23 = 529$.

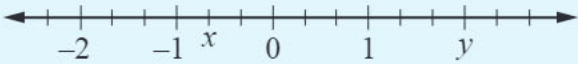
Fractions and Decimals

Question Number	Correct Answer	Rationale
1	B	Choice (B) is correct. Since the table is a semicircle of diameter 12 feet, the radius of the semicircle is 6 feet. The area of the table is $\frac{1}{2} \times \pi \times 6^2$ square feet, or approximately $18 \times 3.14 = 56.52$ square feet. Therefore, of the choices given, the closest to the area of the table is choice (B), 57 square feet.
2	D	Choice (D) is correct. Since the large square has area 9, each of its sides is of length 3. Hence each of the 9 smaller squares has sides of length 1. Since the path drawn in bold is made up of six of the sides of smaller squares, its length is $6 \times 1 = 6$.
3	A	Choice (A) is correct. The division $0.6 \div 10^{-2}$ is equivalent to the multiplication $0.6 \times \frac{1}{10^{-2}} = 0.6 \times 10^2 = 0.6 \times 100 = 60$.
4	C	Choice (C) is correct. The number 3,590 is equal to the product $3.59 \times 1,000$, which can be rewritten as 3.59×10^3 .
5	D	Choice (D) is correct. Since a circle has 360 degrees of arc, the shaded 75-degree sector of the circle represents $\frac{75}{360} = \frac{5}{24}$ of the circle, which is equal to the decimal $0.208\bar{3}$. This value lies between $\frac{5}{25} = 0.20$ and $\frac{6}{25} = 0.24$ on the number line.

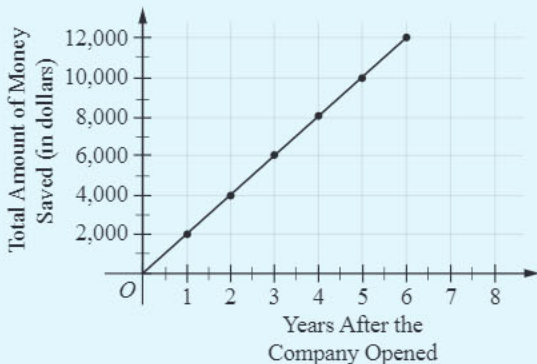
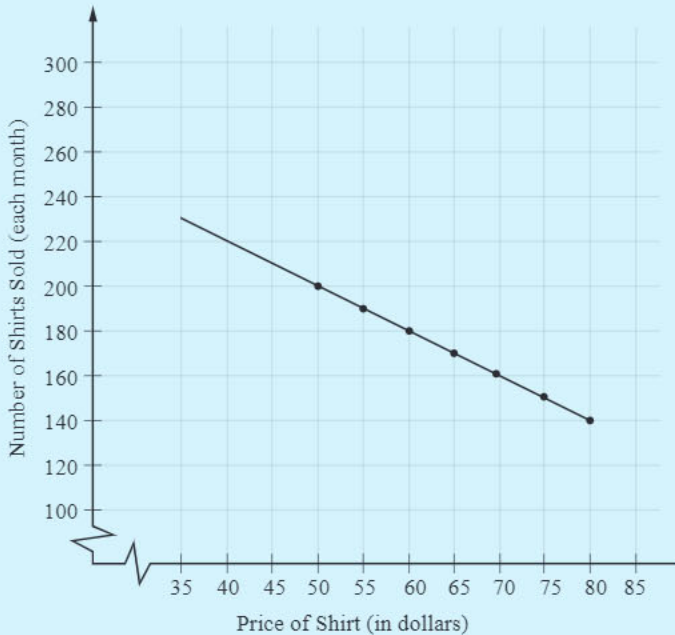
Proportions, Ratios, Rates and Percentages

Question Number	Correct Answer	Rationale
1	A	Choice (A) is correct. Since 40% of 25 is $\frac{40}{100} \times 25 = 10$, and 52% of 25 is $\frac{52}{100} \times 25 = 13$, Jeron made 3 more free-throws attempts than Sidell did.
2	D	Choice (D) is correct. Since there 60 minutes in an hour, the 10-minute interval is equivalent to $\frac{1}{6}$ of an hour. The boy's average speed can be calculated as $\frac{\text{number of miles skied}}{\text{time}}$, which is $\frac{4}{\frac{1}{6}} = 4 \times \frac{6}{1} = 24$ miles per hour.
3	C	Choice (C) is correct. Since every 4th child in line, starting with the fourth in line, gets a toy, it follows that the children who get a toy are in line in positions 4, 8, 12, 16 and 20. Hence, of the 23 children in the line, 5 get a toy, and $23 - 5 = 18$ do not get a toy. Therefore, the ratio of the number of children in line who get a toy to the number of children in line who do not get a toy is 5:18.
4	B	Choice (B) is correct. Since $\frac{52}{160} = \frac{13}{40} = 0.325$, it follows that 52 is 32.5 percent of 160.
5	B	Choice (B) is correct. Since there are about 1.6 kilometers in 1 mile, it follows that Jenna's speed in kilometers per hour is $65 \times 1.6 = 104$ kilometers per hour.

Expressions, Linear Equations and Linear Inequalities

Question Number	Correct Answer	Rationale
1	C	 <p>Choice (C) is correct. The value of x on the number line is $-\frac{2}{3}$, and the value of y on the number line is 2. Substituting these values into the expression $y^2 + 2x$ gives</p> $2^2 + 2\left(-\frac{2}{3}\right) = 4 - \frac{4}{3} = \frac{8}{3}.$
2	B	Choice (B) is correct. The rental fee for the costume consists of the initial charge of \$20 and a daily charge of \$8. Thus if the costume is rented for n days, the total cost, in dollars, is $20 + 8n$.
3	D	Choice (D) is correct. If the original cost of the treadmill is t dollars, an 8% discount on that price is $0.08t$ dollars. Therefore, the discounted price is the original price, in dollars, minus the discount, which is $t - 0.08t$.
4	C	Choice (C) is correct. The cost, in dollars, of n minutes of use is $0.4n$. Therefore, the total cost of this service, in dollars, for a month in which n minutes were used is $20 + 0.4n$.
5	B	Choice (B) is correct. The equation $\frac{x}{3} - 2 = 5x - 2$ is equivalent to $\frac{x}{3} = 5x$. Multiplying both sides of this equation by 3 gives $x = 15x$. It follows that $14x = 0$, so $x = 0$.

Graphs and Equations of Lines

Question Number	Correct Answer	Rationale
1	C	 <p>Choice (C) is correct. The y-value represents the total amount of money that the company saved. From the graph, after 5 years the company was opened, they saved \$10,000.</p>
2	A	 <p>Choice (A) is correct. The graph in (A) is a line with a slope of -10 that contains the point $(50, 200)$.</p>
3	A	<p>Choice (A) is correct. The expression $\frac{\\$220 - \\$140}{4 - 2}$ represents the difference of dollars charged for two different help sessions divided by the difference in the number of hours of help-service used, giving the amount, in dollars, the company charges for each hour of help-service a customer uses.</p>

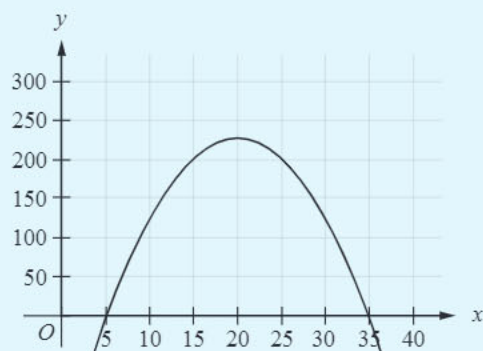
4	A	<p>Choice (A) is correct. Since y represents the amount of points Jen scored, and the x-intercept is the value of x that satisfies equation $2x + 4y = 16$ when $y = 0$, Jen must have scored only 2 points each round. Since she scored a total of 16 points, she must have scored 2 points in 8 rounds.</p>
5	B	<div data-bbox="602 338 1357 1010" data-label="Figure"> <p>The figure shows a Cartesian coordinate system. The x-axis is labeled from -6 to 10 with major grid lines every 1 unit. The y-axis is labeled from -4 to 10 with major grid lines every 1 unit. A straight line is plotted, passing through the points $(-3, 0)$ and $(0, 2)$. The line has a positive slope and intersects the y-axis at $y = 2$.</p> </div> <p>Choice (B) is correct. The y-value of the line increases 2 units for every 3 units of increase in the x-value. Therefore, the slope of the line is $\frac{2}{3}$. The line also intersects the y-axis at 2, and therefore the y-intercept is 2.</p>

Polynomials and Quadratic Applications

Question Number	Correct Answer	Rationale
1	C	<p>Choice (C) is correct. The figure can be divided into three nonoverlapping rectangles. One has area $x(z-t)$, one has area $t(y-x)$ and one has area xt. The sum of the areas is then $(xz - xt) + (ty - tx) + tx = xz - xt + ty$.</p>
2	B	<p>Choice (B) is correct. By the law of exponents, $(xy^3z^4)(x^{-4}y^{-3}z^{-1}) = x^{(1-4)}y^{(3-3)}z^{(4-1)}$.</p> <p>Therefore, $(xy^3z^4)(x^{-4}y^{-3}z^{-1}) = x^{-3}y^0z^3$. This is equivalent to $\frac{z^3}{x^3} = \left(\frac{z}{x}\right)^3$.</p>
3	C	<p>Choice (C) is correct. By definition, the expression $\left(\frac{a}{2} - b\right)^2$ is $\left(\frac{a}{2} - b\right)\left(\frac{a}{2} - b\right)$. This expression is equivalent to $\left(\frac{a}{2}\right)^2 - b\left(\frac{a}{2}\right) - \left(\frac{a}{2}\right)b + b^2$. It follows that $\left(\frac{a}{2} - b\right)^2$ is equivalent to $\left(\frac{a}{2}\right)^2 - \frac{ab}{2} - \frac{ab}{2} + b^2$, which simplifies to $\frac{a^2}{4} - ab + b^2$.</p>
4	C	<p>Choice (C) is correct. The expression $x^2 - 3x - 18$ factors as $(x-6)(x+3)$. Since $x^2 - 3x - 18 = 0$, either $x-6 = 0$ or $x+3 = 0$. It follows that $x = 6$ or $x = -3$. Of the options given, only 6 is a possible value for x.</p>

5

B



Choice (B) is correct. The quadratic expression $-x^2 + 40x - 175$ factors as $(x - 5)(35 - x)$. It follows that the graph of $f(x) = -x^2 + 40x - 175$ intersects the x -axis at $x = 5$ and at $x = 35$.

The greatest value of $f(x)$ occurs at the vertex, and the x -coordinate of the vertex of the parabola is the point halfway between 5 and 35 on the x -axis. This is $5 + \frac{35 - 5}{2} = 20$. So the value of x for which $f(x)$ is greatest is $x = 20$.

Rational Expressions and Equations

Question Number	Correct Answer	Rationale
1	D	Choice (D) is correct. Since Kayla's average speed <u>while biking</u> is s miles per hour, it will take her $\frac{90}{s}$ hours of biking to ride the entire 90-mile bike path. In addition to this time, Kayla's break will add 1 hour to the time it takes her to reach the end of the bike path. Therefore, it will take Kayla $\frac{90}{s} + 1$ hours from the time she leaves the start of the bike path until she reaches the end of the bike path.
2	B	Choice (B) is correct. The graph could be of a rational function that is not defined at $x = 0$ and has a horizontal asymptote at $y = 1$. Of the given choices, (A) $y = \frac{1}{x}$ and (B) $y = \frac{1}{x} + 1$ are not defined at $x = 0$, and of these, only (B) $y = \frac{1}{x} + 1$ has a horizontal asymptote at $y = 1$. Therefore, of the given choices, only (B) $y = \frac{1}{x} + 1$ could be an equation of the graph shown.
3	C	Choice (C) is correct. The quadratic expression $x^2 + 2x - 63$ factors as $x^2 + 2x - 63 = (x + 9)(x - 7)$, and so $(x + 9)\left(\frac{1}{x^2 + 2x - 63}\right)$ can be rewritten as $(x + 9)\left(\frac{1}{(x + 9)(x - 7)}\right) = \frac{1}{x - 7}$.
4	C	Choice (C) is correct. The expression $\frac{1}{y}$ can be rewritten as $\frac{y}{y^2}$, and so $\frac{1}{y} + \frac{1}{y^2}$ can be rewritten as $\frac{y}{y^2} + \frac{1}{y^2} = \frac{y + 1}{y^2}$.
5	D	Choice (D) is correct. Since $x^2 - 2x - 3 = (x + 1)(x - 3)$, the equation $\frac{1}{x + 1} + \frac{3}{x - 3} = \frac{8}{x^2 - 2x - 3}$ can be rewritten as $\frac{x - 3}{x^2 - 2x - 3} + \frac{3(x + 1)}{x^2 - 2x - 3} = \frac{8}{x^2 - 2x - 3}$, or $\frac{4x}{x^2 - 2x - 3} = \frac{8}{x^2 - 2x - 3}$. It follows that $4x = 8$, or $x = 2$.

Radical Expressions and Equations

Question Number	Correct Answer	Rationale
1	A	Choice (A) is correct. Substituting 55 for d and 0.9 for f in the formula $v = \sqrt{30fd}$ gives $v = \sqrt{(30)(0.9)(55)} \approx 38.54$ miles per hour, which, to the nearest tenth, rounds to 38.5 miles per hour.
2	C	Choice (C) is correct. For any nonzero number a and rational number $\frac{m}{n}$, where m and n are integers and $n > 0$, the expression $a^{\frac{m}{n}}$ is defined as $\frac{1}{\sqrt[n]{a^m}}$. Therefore, $(49x)^{-\frac{1}{2}} = \frac{1}{\sqrt{49x}} = \frac{1}{7\sqrt{x}}$.
3	D	Choice (D) is correct. Since $\sqrt{27} = \sqrt{9 \times 3} = 3\sqrt{3}$ and $\sqrt{300} = \sqrt{100 \times 3} = 10\sqrt{3}$, it follows that $\sqrt{27} + \sqrt{300} = 13\sqrt{3}$.
4	A	Choice (A) is correct. If x and y are positive numbers, then $(\sqrt{x^5 y})(\sqrt{x^{-3} y^{-1}}) = \sqrt{(x^5 y)(x^{-3} y^{-1})} = \sqrt{x^2} = x$.
5	B	Choice (B) is correct. Squaring both sides of the equation $\sqrt{x^2 - 3x - 10} = x - 2$ gives $x^2 - 3x - 10 = x^2 - 4x + 4$, which simplifies to $x = 14$. Substituting 14 for x in the original equation, one can see that 14 is a solution of the equation. Therefore, the value of x is 14.

SPCC Computer Skills Placement Test

This is an untimed test consisting of 15 multiple-choice questions. Questions consist of basic computer terms and usage questions, such as the following:

- **Keyboard and mouse functions
Cursors, button usage, etc.
- **Windows operating system functions
Cut/copy/paste, save/open files, print, delete, etc.
- **Windows file organization
My Computer, recycle bin, folders, drives, desktop, etc.
- **External file storage - functions and terms
- **Terms and functions in Microsoft Office software
WordPad/Word, Internet Explorer, Outlook Express, etc.

Students who make 80 or higher satisfy graduation requirements and health admission requirements. Students not making an 80 may seek assistance in the Academic Support Center.



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