

**► Part 1: Arithmetic Reasoning**

Time: 36 minutes

1. If Ellen has \$36.00 to spend at the flower market, and lilies cost \$1.80 each, how many lilies can she purchase?
  - a. 18
  - b. 20
  - c. 24
  - d. 36

2. An aquarium has a base length of 12 inches and a width of 5 inches. If the aquarium is 10 inches tall, what is the total volume?
  - a. 480 cubic inches
  - b. 540 cubic inches
  - c. 600 cubic inches
  - d. 720 cubic inches

3. A man turns in a woman's handbag to the Lost and Found Department of a large downtown store. The man informs the clerk in charge that he found the handbag on the floor beside an entranceway. The clerk estimates that the handbag is worth approximately \$150. Inside, the clerk finds the following items:

1 leather makeup case valued at	\$65
1 vial of perfume, unopened, valued at	\$75
1 pair of earrings valued at	\$150
cash	\$178

The clerk is writing a report to be submitted along with the found property. What should he write as the total value of the found cash and property?

- a. \$468
- b. \$608
- c. \$618
- d. \$718

Use the following information to answer questions 4–6.

The cost of movie theater tickets is \$7.50 for adults and \$5 for children ages 12 and under. On Saturday and Sunday afternoons until 4:00 P.M., there is a matinee price: \$5.50 for adults and \$3 for children ages 12 and under. Special group discounts are available for groups of 30 or more people.

4. Which of these can be determined from the information given in the passage?
  - a. how much it will cost a family of four to buy movie theater tickets on Saturday afternoon
  - b. the difference between the cost of two movie theater tickets on Tuesday night and the cost of one ticket on Sunday at 3:00 P.M.
  - c. how much movie theater tickets will cost each person if he or she is part of a group of 40 people
  - d. the difference between the cost of a movie theater ticket for an adult on Friday night and a movie theater ticket for a 13-year-old on Saturday afternoon at 1:00 P.M.
5. The Reaves family includes one adult, one 15-year-old, one 12-year-old, and one 11-year-old. How much would the Reaves family save by going to a Saturday matinee at 3:30 P.M. instead of a regularly priced movie at 7 P.M.?
  - a. \$25.00
  - b. \$22.50
  - c. \$14.50
  - d. \$8.00

**Part 1: Arithmetic Reasoning**

1. b. Since Ellen has \$36.00, divide the price per lily by \$36.00 in order to see how many lilies she can purchase.  $\frac{\$36.00}{\$1.80} = 20$ , so Ellen can buy 20 lilies at the market.
2. c. The volume of the aquarium can be found by using the formula  $V = l \times w \times h$ . Since the length is 12 inches, the width is 5 inches, and the height is 10 inches, multiply  $V = 12 \times 5 \times 10$  to get a volume of 600 cubic inches.
3. c. The value of the handbag (\$150) must be included in the total.
4. d. Both choices a and b can be ruled out because there is no way to determine how many tickets are for adults or for children. Choice c can be ruled out because the price of group tickets is not given.
5. d. Since the 15-year-old is older than 12, her admission cost will be the same as the adult ticket price. The tickets for the 12- and 11-year-old children will be at the reduced rate. Therefore, the Saturday evening movie would cost  $\$7.50 \times (2 \text{ tickets}) + \$5.00 \times (2 \text{ tickets}) = \$25.00$ . The Saturday matinee movie would cost  $\$5.50 \times (2 \text{ tickets}) + \$3.00 \times (2 \text{ tickets}) = \$17.00$ . Since  $\$25.00 - \$17.00 = \$8.00$ , the Reaves would save \$8.00 by going to the 3:30 P.M. matinee.

- 6.** Using the passage, how can you find the difference in price between a movie theater ticket for an adult and a movie theater ticket for a child under the age of 12, if the tickets are for a show at 3:00 P.M. on a Saturday afternoon?
- subtract \$3.00 from \$5.50
  - subtract \$5.00 from \$7.50
  - subtract \$7.50 from \$5.50
  - add \$5.50 and \$3.00 and divide by 2
- 7.** It takes a typist 0.75 seconds to type one word. At this rate, how many words can be typed in 60 seconds?
- 4.5
  - 8
  - 45
  - 80
- 8.** If the average woman burns 8.2 calories per minute while riding a bicycle, how many calories will she burn if she rides for 35 minutes?
- 286
  - 287
  - 387
  - 980
- 9.** If Raindrop Roofing gave an estimate of \$6,000 to repair the Kleins' roof, and Kendra's Contracting gave an estimate that was  $\frac{3}{5}$  of the estimate by Raindrop Roofing, how much was the estimate given by Kendra's Contracting?
- \$1,200
  - \$2,000
  - \$3,000
  - \$3,600

- 10.** Thirty percent of the students at a middle school are involved in the vocal and instrumental music programs. If 15% of the musicians are in the choir, what percentage of the whole school is in the choir?
- 4.5%
  - 9.0%
  - 15%
  - 30%

**Use the following information to answer questions 11 and 12.**

Basic cable television service, which includes 16 channels, costs \$15 a month. The initial labor fee to install the service is \$25. A \$65 deposit is required, but will be refunded within two years if the customer's bills are paid in full. Other cable services may be added to the basic service: the movie channel service is \$9.40 a month; the news channels are \$7.50 a month; the arts channels are \$5.00 a month; the sports channels are \$4.80 a month.

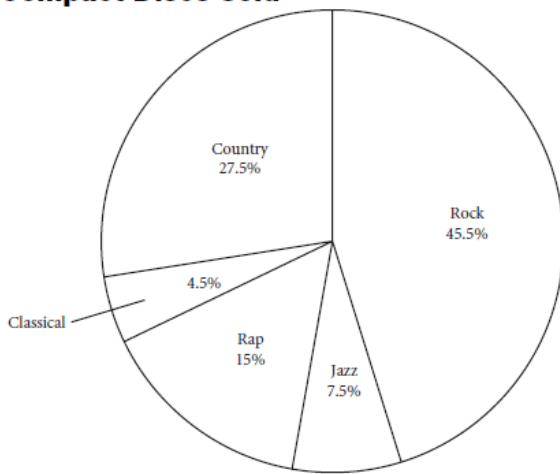
- 11.** A customer's cable television bill totaled \$20 a month. Using the passage above, what portion of the bill was for basic cable service?
- 25%
  - 33%
  - 50%
  - 75%
- 12.** A customer's first bill after having cable television installed totaled \$112.50. This customer chose basic cable and one additional cable service. Which additional service was chosen?
- the news channels
  - the movie channels
  - the arts channels
  - the sports channels

- 6. a.** The adult price on Saturday afternoon is \$5.50; the child's price is \$3.00.
- 7. d.** This problem is solved by dividing 60 by 0.75.
- 8. b.** This is a simple multiplication problem that is solved by multiplying 35 times 8.2.
- 9. d.** Raindrop Roofing gave an estimate of \$6,000 and Kendra's Contracting had an estimate that was  $\frac{3}{5}$  of that, so \$6,000 is multiplied by  $\frac{3}{5}$ . Next, it is found that  $\frac{\$6,000}{1} \times \frac{3}{5} = \frac{\$18,000}{5} = \$3,600$ , the estimate given by Kendra's Contracting.
- 10. a.** In this question, you need to find 15% of the 30% of students that are in the music program. To find 15% of 30%, change the percents to decimal form and multiply. Since  $30\% = 0.30$  and  $15\% = 0.15$ , multiply  $(0.30)(0.15) = 0.045$ . As a decimal, this is equivalent to 4.5% which is choice a.
- 11. d.** The basic cable service fee of \$15 is 75% of \$20.
- 12. a.** The labor fee (\$25) plus the deposit (\$65) plus the basic service (\$15) equals \$105. The difference between the total bill, \$112.50, and \$105 is \$7.50, the cost of the news channels.

- 13.** Out of 100 shoppers polled, 80 said they buy fresh fruit every week. How many shoppers out of 30,000 could be expected to buy fresh fruit every week?
- 2,400
  - 6,000
  - 22,000
  - 24,000

Use the following information to answer questions 14 and 15.

**Compact Discs Sold**



- 14.** If 400 compact discs were sold altogether, how many of the compact discs sold were country music?
- 11
  - 28
  - 55
  - 110

- 15.** Based on the graph, which types of music represent exactly half of the compact discs sold?
- rock and jazz
  - classical and rock
  - rap, classical, and country
  - jazz, classical, and rap

- 16.** Last year, 220 people bought cars from a certain dealer. Of those, 60% reported that they were completely satisfied with their new cars. How many people reported being unsatisfied with their new car?
- 36
  - 55
  - 88
  - 132

- 17.** Of 1,125 university students, 135 speak fluent Spanish. What percentage of the student body speaks fluent Spanish?
- 7.3%
  - 8.3%
  - 12%
  - 14%

- 18.** A rectangular community garden needs fencing to keep deer from eating the vegetables. If 200 linear feet of fencing is needed to enclose the garden space, which of the following could be the length and width dimensions of the garden?
- 100 feet long and 100 feet wide
  - 100 feet long and 20 feet wide
  - 80 feet long and 20 feet wide
  - 50 feet long and 40 feet wide

- 19.** A piece of ribbon 3 feet 4 inches long was divided into 5 equal parts. How long was each part?
- 1 foot 2 inches
  - 10 inches
  - 8 inches
  - 6 inches

## Answers

- 13.** d. Eighty out of 100 is 80%. Eighty percent of 30,000 is 24,000.
- 14.** d. 27.5% of 400 is 110.
- 15.** b. Rock is 45.5%; when we add 4.5% for classical, the total is 50%.
- 16.** c. If 60% of the people were satisfied with their new car, 40% were unsatisfied; 40% of 220 is 88.
- 17.** c. Divide 135 Spanish-speaking students by 1,125 total number of students to arrive at .12 or 12%.
- 18.** c. Since the garden needs 200 feet of linear fencing to enclose it, the distance around the garden (the perimeter) is 200 feet. The formula for calculating the perimeter of a rectangle is  $2 \times \text{length} + 2 \times \text{width}$ .  $2 \times 80 + 2 \times 20 = 200$ , so the dimensions of the garden could be 80 feet long and 20 feet wide.
- 19.** c. Three feet 4 inches equals 40 inches; 40 divided by 5 is 8.

**20.** A middle school cafeteria has three different options for lunch.

For \$2, a student can get either a sandwich or two cookies.

For \$3, a student can get a sandwich and one cookie.

For \$4, a student can get either two sandwiches, or a sandwich and two cookies.

If Jimae has \$6 to pay for lunch for her and her brother, which of the following is not a possible combination?

- a. three sandwiches and one cookie
- b. two sandwiches and two cookies
- c. one sandwich and four cookies
- d. three sandwiches and no cookies

**21.** A circular table is going to be covered with tile. If the diameter of the table is 10 feet, approximately how many square feet of tile must be purchased to cover the table?

- a. 10 square feet
- b. 16 square feet
- c. 20 square feet
- d. 79 square feet

**22.** Mr. Beard's temperature is 98° Fahrenheit. What is his temperature in degrees Celsius?

$$C = \frac{5}{9}(F - 32)$$

- a. 35.8
- b. 36.7
- c. 37.6
- d. 31.1

**23.** All of the rooms on the main floor of an office building are rectangular, with 8-foot-high ceilings. Keira's office is 9 feet wide by 11 feet long. What is the combined surface area of the four walls of her office, including any windows and doors?

- a. 99 square feet
- b. 160 square feet
- c. 320 square feet
- d. 729 square feet

**24.** A recipe serves four people and calls for  $1\frac{1}{2}$  cups of broth. If you want to serve six people, how much broth do you need?

- a. 2 cups
- b.  $2\frac{1}{4}$  cups
- c.  $2\frac{1}{3}$  cups
- d.  $2\frac{1}{2}$  cups

**25.** Plattville is 80 miles west and 60 miles north of Quincy. How long is a direct route from Plattville to Quincy?

- a. 100 miles
- b. 120 miles
- c. 140 miles
- d. 160 miles

**26.** A builder has 27 cubic feet of concrete to pave a sidewalk whose length is 6 times its width. The concrete must be poured 6 inches deep. How long is the sidewalk?

- a. 9 feet
- b. 12 feet
- c. 15 feet
- d. 18 feet

**27.** Which of the following brands is the least expensive per ounce?

Brand	W	X	Y	Z
Price	0.21	0.48	0.56	0.96
Weight in ounces	6	15	20	32

- a. W
- b. X
- c. Y
- d. Z

- 20. a.** It will cost \$3 for a sandwich and a cookie. To get two additional sandwiches, it would cost another \$4. Therefore, it would cost \$7 to get three sandwiches and a cookie. Since she has only \$6 to spend, this combination is not possible.
- 21. d.** In order to know how many square feet of tile are needed to cover the table, the area of the table must be calculated. The area of a circle is calculated with the formula  $A = \pi r^2$ . The diameter of the table is 10 feet and therefore the radius is 5 feet (half the diameter). The area of the tabletop will be  $\pi \times 5^2 = 3.14 \times 25 = 78.5$  feet. The closest approximation of 78.5 is 79 square feet.
- 22. b.** Use the formula beginning with the operation in parentheses:  $98 - 32 = 66$ . Then multiply 66 by  $\frac{5}{9}$ , first multiplying 66 by 5 to get 330; 330 divided by 9 is 36.66667, which is rounded up to 36.7.
- 23. c.** Each 9-foot wall has an area of  $9 \times 8$  or 72 square feet. There are two such walls, so those two walls combined have an area of  $72 \times 2$  or 144 square feet. Each 11-foot wall has an area of  $11 \times 8$  or 88 square feet, and again there are two such walls:  $88 \times 2 = 176$ . To find the total surface area, add 144 and 176 to get 320 square feet.
- 24. b.**  $1\frac{1}{2}$  cups equals  $\frac{3}{2}$  cups. The ratio is 6 people to 4 people, which is equal to the ratio of  $x$  to  $\frac{3}{2}$ . By cross multiplying, we get  $6(\frac{3}{2})$  equals  $4x$ , or 9 equals  $4x$ . Dividing both sides by 4, we get  $\frac{9}{4}$ , or  $2\frac{1}{4}$  cups.
- 25. a.** The distance between Plattville and Quincy is the hypotenuse of a right triangle with sides of length 80 and 60. The length of the hypotenuse equals the square root of  $(80^2 + 60^2)$ , which equals the square root of  $(6,400 + 3,600)$ , which equals the square root of 10,000, which equals 100 miles.
- 26. d.** The volume of concrete is 27 cubic feet. Volume is length times width times depth, or  $(l)(w)(d)$ , so  $(l)(w)(d) = 27$ . We're told that the length  $l$  is 6 times the width  $w$ , so  $l$  equals  $6w$ . We're also told that the depth is 6 inches, or 0.5 feet. Substituting what we know about the length and depth into the original equation and solving for  $w$ , we get  $(l)(w)(d) = (6w)(w)(0.5) = 27.3w^2 = 27$ ;  $w^2 = 9$ , so  $w = 3$ . To get the length, we remember that  $l$  equals  $6w$ , so  $l$  equals  $(6)(3)$ , or 18 feet.
- 27. c.** Find the price per ounce of each brand, as follows: Brand W is  $\frac{21}{6}$  or 3.5 cents per ounce; Brand X is  $\frac{48}{15}$  or 3.2 cents per ounce; Brand Y is  $\frac{56}{20}$  or 2.8 cents per ounce; Brand Z is  $\frac{96}{32}$  or 3.0 cents per ounce. It is then easy to see that Brand Y, at 2.8 cents per ounce, is the least expensive.



- 28.** Belicia drives a compact car that gets, on average, 28 miles per gallon of gas. If she must drive 364 miles from Los Angeles to San Francisco, and gas costs on average \$4.85 per gallon, approximately how much will she spend on gas?
- a. \$63.00
  - b. \$75.00
  - c. \$96.00
  - d. \$136.00
- 29.** A cook spends \$540 on silverware. If a place setting includes one knife, one fork, and two spoons, and if knives cost twice as much as forks or spoons, how many place settings did the cook buy?
- a. 90
  - b. 108
  - c. 135
  - d. 180
- 30.** An office uses two dozen pencils and  $3\frac{1}{2}$  reams of paper each week. If pencils cost five cents each and a ream of paper costs \$7.50, how much does it cost to supply the office for a week?
- a. \$7.55
  - b. \$12.20
  - c. \$27.45
  - d. \$38.25

- 28. a.** The first calculation needed to be made is to figure out how many gallons of gas Belicia's car will consume in the 364-mile trip. The car gets 28 miles per gallon of gas, so divide 364 by 28 to calculate this:  $\frac{364 \text{ miles}}{28 \text{ miles per gallon}} = 13$  gallons of gas needed. Since gas costs \$4.85 per gallon, calculate the total cost by multiplying 13 gallons of gas by \$4.85.  $13 \times \$4.85 = \$63.05$ .
- 29. b.**  $K + F + S = 540$ . Also,  $K = 2F$  and  $S = 2F$ , which changes the original equation to  $2F + F + 2F = 540$ , so  $5F = 540$  and  $F = 108$ . Since there is one fork per place setting, the cook can buy 108 place settings.
- 30. c.** First find the total price of the pencils:  $(24 \text{ pencils})(\$0.05) = \$1.20$ . Then find the total price of the paper:  $(3.5 \text{ reams})(\$7.50 \text{ per ream}) = \$26.25$ . Next, add the two totals together:  $\$1.20 + 26.25 = \$27.45$ .