

► **Part 1: Arithmetic Reasoning**

Time: 36 minutes

1. Mr. Blake has inherited some musical instruments from his father. They are:

1 violin valued at	\$3,500
2 violin bows, each valued at	\$850
2 music stands, each valued at	\$85
1 cello valued at	\$2,300

In addition, Mr. Blake's father has left him a watch, valued at \$250, and some old sheet music valued at \$85 total. What is the value of Mr. Blake's inheritance?

- a. \$6,735
 b. \$7,070
 c. \$7,670
 d. \$8,005
2. An Olympic athlete has the following weekday-training schedule:

DAY	TRAINING TIME
Monday	3 hours and 30 minutes
Tuesday	2 hours and 15 minutes
Wednesday	1 hour and 45 minutes
Thursday	4 hours and 30 minutes
Friday	3 hours

What is the average amount of time per weekday that she trains?

- a. 2 hours and 45 minutes
 b. 3 hours
 c. 3 hours and 15 minutes
 d. 3 hours and 30 minutes

3. If a particular woman's resting heartbeat is 72 beats per minute and she is at rest for $6\frac{1}{2}$ hours, about how many times will her heart beat during that period of time?

- a. 4,320
 b. 28,080
 c. 4,680
 d. 43,200

4. A patient's hospice stay cost $\frac{1}{4}$ as much as his visit to the emergency room. His home nursing cost twice as much as his hospice stay. If his total healthcare bill was \$140,000, how much did his home nursing cost?

- a. \$10,000
 b. \$20,000
 c. \$40,000
 d. \$80,000

5. Chuck is making a patio using $1\frac{1}{2}$ foot cement squares. The patio will be 10 cement squares by 10 cement squares. If the cement squares are placed right next to each other without any space in between, what will the dimensions of the patio be?

- a. 10 feet by 10 feet
 b. 20 feet by 20 feet
 c. $12\frac{1}{2}$ feet by $12\frac{1}{2}$ feet
 d. 15 feet by 15 feet

6. At a certain school, half the students are female and one-twelfth of the students are from outside the state. What proportion of the students would you expect to be females from outside the state?

- a. $\frac{1}{12}$
 b. $\frac{1}{24}$
 c. $\frac{1}{6}$
 d. $\frac{1}{3}$

Answers

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- 1. d.** Don't forget that there are two bows and two music stands, and remember to add the value of the watch and the sheet music.
- 2. b.** Convert all of the training times to minutes. The total number of minutes she trains is 900. Divided by 5, the average number of minutes trained per weekday is 180, which is 3 hours.
- 3. b.** This is a two-step multiplication problem. To find out how many heartbeats there would be in one hour, you must multiply 72 by 60 (minutes) and then multiply this result, 4,320, by 6.5 hours.
- 4. c.** Let E = emergency room cost; H = hospice cost, which is $(\frac{1}{4})E$; N = home nursing cost, which is $2E$, or $2(\frac{1}{4})E$. The total bill is $E + H + N$, which is $E + (\frac{1}{4})E + (\frac{2}{4})E = 140,000$. Add the left side of the equation to get $\frac{7}{4}E = 140,000$. To solve for E , multiply both sides of the equation by $(\frac{4}{7})$; $E = 140,000(\frac{4}{7})$, or 80,000; $H = (\frac{1}{4})E$, or 20,000, and $N = 2H$, or 40,000.
- 5. d.** Multiply $1\frac{1}{2}$ by 10. Change $1\frac{1}{2}$ to an improper fraction ($\frac{3}{2}$) and make 10 into a fraction by placing it over 1 ($\frac{10}{1}$); $\frac{3}{2} \times \frac{10}{1} = \frac{30}{2} = 15$ feet. Each side is 15 feet long, so the dimensions are 15 ft by 15 ft.
- 6. b.** If half the students are female, then you would expect half of the out-of-state students to be female. One half of $\frac{1}{12}$ is $\frac{1}{24}$.

PRACTICE ASVAB CORE TEST 3

7. Izzy is going to buy a tent that originally cost \$220.00, and is now 30% off. What is the sale price of the tent?
- \$190.00
 - \$154.00
 - \$165.00
 - \$66.00

8. Based on the information below, estimate the weight of a person who is 5'5" tall.

HEIGHT	WEIGHT
5'	110 pounds
6'	170 pounds

- 125
 - 130
 - 135
 - 140
9. During exercise, a person's heart rate should be between 60% and 90% of the difference between 220 and the person's age. According to this guideline, what should a 30-year-old person's maximum heart rate be during exercise?
- 114
 - 132
 - 171
 - 198
10. The local firefighters are doing a "fill the boot" fundraiser. Their goal is to raise \$3,500. After three hours, they have raised \$2,275. Which statement below is accurate?
- They have raised 35% of their goal.
 - They have $\frac{7}{20}$ of their goal left to raise.
 - They have raised less than $\frac{1}{2}$ of their goal.
 - They have raised more than $\frac{3}{4}$ of their goal.

11. A shoe company decides to sell a pair of sneakers for \$78.00. If this pair of sneakers cost the shoe company \$6.00 to manufacture, what is the percentage increase they are using to determine their selling price?
- 12%
 - 72%
 - 120%
 - 1200%

12. In half of migraine sufferers, a certain drug reduces the number of migraines by 50%. What percentage of all migraines can be eliminated by this drug?
- 25%
 - 50%
 - 75%
 - 100%

13. Joey, Aaron, Barbara, and Stu have been collecting pennies and putting them in identical containers. Joey's container is $\frac{3}{4}$ full, Aaron's is $\frac{3}{5}$ full, Barbara's is $\frac{2}{3}$ full, and Stu's is $\frac{2}{5}$ full. Whose container has the most pennies?
- Joey
 - Aaron
 - Barbara
 - Stu

14. Rosa kept track of how many hours she spent reading during the month of August. The first week she read for $4\frac{1}{2}$ hours, the second week for $3\frac{3}{4}$ hours, the third week for $8\frac{1}{2}$ hours, and the fourth week for $1\frac{1}{3}$ hours. How many hours altogether did she spend reading in the month of August?
- $17\frac{47}{60}$
 - 16
 - $16\frac{1}{8}$
 - $18\frac{2}{15}$

Answers

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7. c. To find the discount, take 30% of \$220: $0.30 \times \$220 = \66 . Subtract that from the original price: $\$220 - \$66 = \$154$.
8. c. A foot in height makes a difference of 60 pounds, or 5 pounds per inch of height over 5'. A person who is 5'5" is $(5)(5)$ pounds, or 25 pounds, heavier than the person who is 5', so add 25 pounds to 110 pounds to get 135 pounds.
9. c. The difference between 220 and this person's age is 190. The maximum heart rate is 90% of this: $(0.9)(190) = 171$.
10. a. The part of their goal that they have raised is \$2,275 and the whole goal is \$3,500. The fraction for this is $\frac{2,275}{3,500}$. The numerator and denominator can both be divided by 175 to get a simplified fraction of $\frac{13}{20}$. They have completed $\frac{13}{20}$ of their goal, which means that they have $\frac{7}{20}$ left to go ($\frac{20}{20} - \frac{13}{20} = \frac{7}{20}$).
11. d. Percentage increase = (amount of change) \div (original amount)
- $\frac{(78-6)}{6} = \frac{72}{6}$
 - $\frac{72}{6} = 12 = 1,200\%$
12. a. The drug is 50% effective for 50% of migraine sufferers, so it eliminates $(0.50) \times (0.50)$, or 0.25 of all migraines.
13. a. Compare $\frac{3}{4}$, $\frac{3}{5}$, $\frac{2}{3}$, $\frac{2}{5}$ by finding a common denominator. The common denominator for 3, 4, and 5 is 60. Multiply the numerator and denominator of a fraction by the same number so that the denominator becomes 60. The fractions then become $\frac{45}{60}$, $\frac{36}{60}$, $\frac{40}{60}$, and $\frac{24}{60}$. The fraction with the largest numerator is the largest fraction; $\frac{45}{60}$ is the largest fraction. It is equivalent to Joey's fraction of $\frac{3}{4}$.
14. a. Add the number of hours together using a common denominator of 60; $4\frac{30}{60} + 3\frac{45}{60} + 8\frac{12}{60} = 1\frac{20}{60} = 16\frac{107}{60}$, which is simplified to $17\frac{47}{60}$ hours.

PRACTICE ASVAB CORE TEST 3

- 15.** A study shows that 600,000 women die each year in pregnancy and childbirth, one-fifth more than scientists previously estimated. How many such deaths did the scientists previously estimate?
- a. 120,000
 - b. 300,000
 - c. 480,000
 - d. 500,000
- 16.** A gram of fat contains nine calories. An 1,800-calorie diet allows no more than 20% calories from fat. How many grams of fat are allowed in that diet?
- a. 40 g
 - b. 90 g
 - c. 200 g
 - d. 360 g
- 17.** If a vehicle is traveling through a desert at an average speed of 90 kilometers an hour, how many meters will it have traveled after 5 hours and 30 minutes of driving at this speed?
- a. 48,000 meters
 - b. 480,000 meters
 - c. 49,500 meters
 - d. 495,000 meters
- 18.** After three days, a group of hikers discovers that they have used $\frac{2}{5}$ of their supplies. At this rate, how many more days can they go forward before they have to turn around?
- a. 0.75 days
 - b. 3.75 days
 - c. 4.5 days
 - d. 7.5 days
- 19.** A supply truck can carry three tons. A breakfast ration weighs 12 ounces, and the other two daily meals weigh 18 ounces each. On a ten-day trip, how many troops can be supplied by one truck?
- a. 100
 - b. 150
 - c. 200
 - d. 320
- 20.** A clerk can process 26 forms per hour. If 5,600 forms must be processed in an eight-hour day, how many clerks must you hire for that day?
- a. 24 clerks
 - b. 25 clerks
 - c. 26 clerks
 - d. 27 clerks
- 21.** On the same latitude, Company E travels east at 35 miles per hour and Company F travels west at 15 miles per hour. If the two companies start out 2,100 miles apart, how long will it take them to meet?
- a. 42 hours
 - b. 60 hours
 - c. 105 hours
 - d. 140 hours
- 22.** Laura has the following regular test scores in her economics class: 78, 94, 64, 81, 83. On her final exam, she scored a 90. When determining students' final averages, the professor drops the lowest regular test score, and then counts the remaining regular tests as 50% of the final average. The final exam counts as the other 50% of the total average. What will Laura's final average be?
- a. 83
 - b. 84
 - c. 85
 - d. 87

Answers

- 15. d.** Let E = the estimate. *One-fifth more than the estimate* means $\frac{6}{5}$ or 120% of E , so $600,000 = (1.20)(E)$. Dividing both sides by 1.2 leaves $E = 500,000$.
- 16. a.** 20% of 1,800, or $(0.2)(1,800) = 360$ calories allowed from fat. Since there are nine calories in each gram of fat, divide 360 by 9 to find that 40 grams of fat are allowed.
- 17. d.** *Distance = rate \times time.* Kilometers = 90×5.5 , so the vehicle traveled 495 kilometers. Since there are 1,000 meters in 1 kilometer, the vehicle traveled 495,000 meters.
- 18. a.** First, find out how long the entire hike can be, based on the rate at which the hikers are using their supplies. If 1 = all supplies and x = entire hike, then $\frac{5}{3} = \frac{1}{x}$. Cross multiply to get $\frac{2x}{5} = 3$, so that $x = \frac{(3)(5)}{2}$, or $7\frac{1}{2}$ days for the length of the entire hike. This means that the hikers could go forward for 3.75 days altogether before they would have to turn around. They have already hiked for three days, which leaves 0.75 for the amount of time they can now go forward before having to turn around.
- 19. c.** Three tons is 6,000 pounds; 6,000 pounds multiplied by 16 ounces per pound is 96,000 ounces. The total weight of each daily ration is 48 ounces. Ninety-six thousand divided by 48 is 2,000 troops supplied. Two thousand divided by 10 days is 200 troops supplied.
- 20. d.** Twenty-six forms multiplied by 8 hours is 208 forms per day per clerk. Divide 5,600 by 208 to get approximately 26.9, which means you have to hire 27 clerks for the day.
- 21. a.** The companies' combined rate of travel is 50 miles per hour. 2,100 miles divided by 50 miles per hour is 42 hours.
- 22. d.** After dropping her 64, Laura's regular test average is $\frac{(78 + 94 + 81 + 83)}{4} = 84$. Since that counts equally with her final exam score of 90, Laura's final average is determined by averaging 84 and 90, which is 87.

PRACTICE ASVAB CORE TEST 3

- 23.** Mike types three times as fast as Nick. Together they type 24 pages per hour. If Nick learns to type as fast as Mike, how much will they be able to type per hour?
- 30 pages
 - 36 pages
 - 40 pages
 - 48 pages

- 24.** If you take recyclables to whichever recycler will pay the most, what is the greatest amount of money you could get for 2,200 pounds of aluminum, 1,400 pounds of cardboard, 3,100 pounds of glass, and 900 pounds of plastic?

	ALUM- INUM	CARD- BOARD	GLASS	PLASTIC
Recycler X	6 cents/ pound	3 cents/ pound	8 cents/ pound	2 cents/ pound
Recycler Y	7 cents/ pound	4 cents/ pound	7 cents/ pound	3 cents/ pound

- \$440
 - \$447
 - \$454
 - \$485
- 25.** Water is coming into a tank three times as fast as it is going out. After one hour, the tank contains 11,400 gallons of water. How fast is the water coming in?
- $\frac{3,800 \text{ gallons}}{\text{hour}}$
 - $\frac{5,700 \text{ gallons}}{\text{hour}}$
 - $\frac{11,400 \text{ gallons}}{\text{hour}}$
 - $\frac{17,100 \text{ gallons}}{\text{hour}}$

- 26.** A standard 18-wheel tractor-trailer is permitted to carry a load of up to 80,000 pounds. A smaller six-wheel trailer is able to carry a load of up to 30,000 pounds. If the government needs to transport 350,000 pounds of supplies from Camp Pendleton to Fort Campbell, what is the most efficient use of vehicles for this move?
- five 18-wheelers
 - 12 six-wheelers
 - four 18-wheelers and one six-wheeler
 - three 18-wheelers and four six-wheelers

- 27.** A uniform requires four square yards of cloth. To produce uniforms for 84,720 troops, how much cloth is required?
- 330,880 square yards
 - 336,880 square yards
 - 338,880 square yards
 - 340,880 square yards

- 28.** A dormitory now houses 30 students and allows 42 square feet of space per student. If five more students are put into this dormitory, how much less space will each student have?
- 5 square feet
 - 6 square feet
 - 7 square feet
 - 8 square feet

- 29.** Ron is half as old as Sam, who is three times as old as Ted. The sum of their ages is 55. How old is Ron?
- 5
 - 10
 - 15
 - 30

Answers

- 23. b.** $M = 3N$; $3N + N = 24$, so that $N = 6$. Since $M = 3N$, $M = 18$. If Nick catches up to Mike's typing speed, then both M and N will equal 18, and then the combined rate will be 36 pages per hour.
- 24. d.** $2,200(0.07) = \$154$; $\$154 + 1,400(0.04) = \210 ; $\$210 + 3,100(0.08) = \458 ; $\$458 + 900(0.03) = \485 .
- 25. d.** $3w =$ water coming in; $w =$ water going out; $3w - w = 11,400$, which means that w is 5,700 and $3w$ is 17,100.
- 26. c.** Four 18-wheelers can carry $4 \times 80,000 = 320,000$ pounds and one six-wheeler can carry another 30,000 pounds, which adds up to 350,000 pounds.
- 27. c.** 84,720 troops multiplied by 4 square yards of cloth is 338,880 square yards of cloth required.
- 28. b.** 30 men multiplied by 42 square feet of space is 1,260 square feet of space; 1,260 square feet divided by 35 men is 36 square feet, so each man will have 6 less square feet of space.
- 29. c.** Let $T =$ Ted's age; $S =$ Sam's age $= 3T$; $R =$ Ron's age $= \frac{S}{2}$, or $\frac{3T}{2}$. The sum of the ages is 55, which means $T + 3T + \frac{3T}{2} = 55$. Find the common denominator (2) to add the left side of the equation; $T = 10$. If Ted is 10, then Sam is 30, and Ron is $\frac{3T}{2}$, which is 15 years old.

PRACTICE ASVAB CORE TEST 3

- 30.** To lower a fever of 105°F, ice packs are applied for one minute and then removed for five minutes before being applied again. Each application lowers the fever by half a degree. How long will it take to lower the fever to 99°F?
- a. one hour
 - b. one hour and 12 minutes
 - c. one hour and 15 minutes
 - d. one hour and 30 minutes

Answers

- 30. b.** The difference between 105 and 99 is 6 degrees. The temperature is lowered by half a degree every six minutes, or 1 degree every 12 minutes; 6 degrees multiplied by 12 minutes per degree is 72 minutes, or 1 hour and 12 minutes.