

Part V

Practice ASVAB Exams

The 5th Wave

By Rich Tennant



"Excuse me. I'm a dog. Can I still take
the CAT-ASVAB?"

In this part . . .

Doing well on the ASVAB requires an effective study plan. You want to concentrate your study time on subject areas you may be having problems with. The practice examinations in this part are great tools to enhance and plan your study program.

Take the first test in this section to determine your strengths and weaknesses. Concentrate most of your study efforts on subject areas that are hard for you. When you think you've got it down, take the second test to measure your improvement. Take the third test right before you're ready to take the actual ASVAB to brush up on your test-taking skills.

In this part, you also find a bonus Armed Forces Qualification Test (AFQT) practice exam. This practice test includes only the four ASVAB subtests that are used to make up your AFQT score — the score that determines whether you can even join the military branch of your choice.

Not only does taking the sample tests help you understand what you need to study, but it also gets you into the test-taking mindset. By taking the tests, you get used to the format of each subtest. Trust me — these sample tests will give you confidence on test day.

Chapter 16

Practice Exam 1



This sample test features nine subtests, just like the ASVAB. As you may have guessed, the sample tests in this book are paper-based tests. (Yes, I'm a master of the obvious.) When you take the actual ASVAB, it may be a paper-based or a computer-based exam. The computer version basically has the same subtests as the paper version, but it follows a different time format and has a different number of questions.

Another difference with the computer-based test is that you can't skip a question and go back to it, and you can't change an answer after you enter it into the computer. Check out the computer-based test in greater detail in Chapter 3, and experience computer-based practice tests on the CD-ROM.

To get the most out of this sample test, take it under the same conditions as the real ASVAB:

- ✓ Allow yourself about 3 hours to take the entire exam, and take the whole thing at one time.
- ✓ Find a quiet place where you won't be interrupted.
- ✓ Bring a timer that you can set for various lengths of time, some scratch paper (you get two pieces during the exam, but you can get more; just ask for it as needed), and a pencil.
- ✓ At the start of each subtest, set your timer for the specified period of time. Don't go on to the next section until the timer has gone off, and don't go back to a previous section. If you finish early, check your work for that section only.
- ✓ Use the answer sheet that's provided.
- ✓ Don't take a break during any subtest. You can take a short one- or two-minute break between subtests if you need it.

After you complete the entire sample test, check your answers against the answers and explanations in Chapter 17.

Your primary goal with this sample test is to determine your strengths and weaknesses. If you miss only one question on the Word Knowledge subtest but you miss 15 on Arithmetic Reasoning, you know where to spend your study time. If you're not going to pursue a career that requires a score on a particular subtest or the type of knowledge a subtest covers, don't worry about your score there. (See Appendix A for information on the subtests that various careers require good scores on.)

Answer Sheet for Practice Exam 1

Subtest 1: General Science

1 A B C D	6 A B C D	11 A B C D	16 A B C D	21 A B C D
2 A B C D	7 A B C D	12 A B C D	17 A B C D	22 A B C D
3 A B C D	8 A B C D	13 A B C D	18 A B C D	23 A B C D
4 A B C D	9 A B C D	14 A B C D	19 A B C D	24 A B C D
5 A B C D	10 A B C D	15 A B C D	20 A B C D	25 A B C D

Subtest 2: Arithmetic Reasoning

1 A B C D	7 A B C D	13 A B C D	19 A B C D	25 A B C D
2 A B C D	8 A B C D	14 A B C D	20 A B C D	26 A B C D
3 A B C D	9 A B C D	15 A B C D	21 A B C D	27 A B C D
4 A B C D	10 A B C D	16 A B C D	22 A B C D	28 A B C D
5 A B C D	11 A B C D	17 A B C D	23 A B C D	29 A B C D
6 A B C D	12 A B C D	18 A B C D	24 A B C D	30 A B C D

Subtest 3: Word Knowledge

1 A B C D	8 A B C D	15 A B C D	22 A B C D	29 A B C D
2 A B C D	9 A B C D	16 A B C D	23 A B C D	30 A B C D
3 A B C D	10 A B C D	17 A B C D	24 A B C D	31 A B C D
4 A B C D	11 A B C D	18 A B C D	25 A B C D	32 A B C D
5 A B C D	12 A B C D	19 A B C D	26 A B C D	33 A B C D
6 A B C D	13 A B C D	20 A B C D	27 A B C D	34 A B C D
7 A B C D	14 A B C D	21 A B C D	28 A B C D	35 A B C D

Subtest 4: Paragraph Comprehension

1 A B C D	4 A B C D	7 A B C D	10 A B C D	13 A B C D
2 A B C D	5 A B C D	8 A B C D	11 A B C D	14 A B C D
3 A B C D	6 A B C D	9 A B C D	12 A B C D	15 A B C D

Subtest 5: Mathematics Knowledge

1 A B C D	6 A B C D	11 A B C D	16 A B C D	21 A B C D
2 A B C D	7 A B C D	12 A B C D	17 A B C D	22 A B C D
3 A B C D	8 A B C D	13 A B C D	18 A B C D	23 A B C D
4 A B C D	9 A B C D	14 A B C D	19 A B C D	24 A B C D
5 A B C D	10 A B C D	15 A B C D	20 A B C D	25 A B C D

Subtest 6: Electronics Information

1 A B C D	5 A B C D	9 A B C D	13 A B C D	17 A B C D
2 A B C D	6 A B C D	10 A B C D	14 A B C D	18 A B C D
3 A B C D	7 A B C D	11 A B C D	15 A B C D	19 A B C D
4 A B C D	8 A B C D	12 A B C D	16 A B C D	20 A B C D

Subtest 7: Auto & Shop Information

1 A B C D	6 A B C D	11 A B C D	16 A B C D	21 A B C D
2 A B C D	7 A B C D	12 A B C D	17 A B C D	22 A B C D
3 A B C D	8 A B C D	13 A B C D	18 A B C D	23 A B C D
4 A B C D	9 A B C D	14 A B C D	19 A B C D	24 A B C D
5 A B C D	10 A B C D	15 A B C D	20 A B C D	25 A B C D

Subtest 8: Mechanical Comprehension

1 A B C D	6 A B C D	11 A B C D	16 A B C D	21 A B C D
2 A B C D	7 A B C D	12 A B C D	17 A B C D	22 A B C D
3 A B C D	8 A B C D	13 A B C D	18 A B C D	23 A B C D
4 A B C D	9 A B C D	14 A B C D	19 A B C D	24 A B C D
5 A B C D	10 A B C D	15 A B C D	20 A B C D	25 A B C D

Subtest 9: Assembling Objects

1 A B C D	6 A B C D	11 A B C D	16 A B C D	21 A B C D
2 A B C D	7 A B C D	12 A B C D	17 A B C D	22 A B C D
3 A B C D	8 A B C D	13 A B C D	18 A B C D	23 A B C D
4 A B C D	9 A B C D	14 A B C D	19 A B C D	24 A B C D
5 A B C D	10 A B C D	15 A B C D	20 A B C D	25 A B C D

Subtest 1: General Science

Time: 11 minutes for 25 questions

Directions: This subtest tests your knowledge of general science principles usually covered in high school classes. Pick the best answer for each question and then mark the space on your answer sheet that corresponds to the letter indicating your choice.

1. Which planet is named after the Greek god who personified the sky?
 - (A) Earth
 - (B) Mars
 - (C) Pluto
 - (D) Uranus
2. An animal that eats only meat is called a(n)
 - (A) omnivore.
 - (B) herbivore.
 - (C) carnivore.
 - (D) voracious.
3. The chemical process in which electrons are removed from a molecule is called
 - (A) respiration.
 - (B) recreation.
 - (C) oxidation.
 - (D) metabolism.
4. What is a single unit of quanta called?
 - (A) quantum
 - (B) quantumonium
 - (C) quantus
 - (D) quanfactorial
5. Light waves travel at a rate of about
 - (A) 186,000 miles per hour.
 - (B) 186,000 miles per minute.
 - (C) 18,600 miles per hour.
 - (D) 186,000 miles per second.
6. The largest planet in the solar system is
 - (A) Earth.
 - (B) Mars.
 - (C) Saturn.
 - (D) Jupiter.
7. The intestines are part of the
 - (A) circulatory system.
 - (B) nervous system.
 - (C) respiratory system.
 - (D) digestive system.
8. Joints that hold bones firmly together are called
 - (A) hinge joints.
 - (B) ball and socket joints.
 - (C) fixed joints.
 - (D) pivot joints.
9. Of the levels listed, the top or broadest level of the classification system for living organisms is called the
 - (A) class.
 - (B) phylum.
 - (C) kingdom.
 - (D) genus.
10. Which planet is the brightest object in the sky, aside from the sun and moon?
 - (A) Saturn
 - (B) Pluto
 - (C) Venus
 - (D) Mercury
11. The human heart includes
 - (A) 2 chambers.
 - (B) 3 chambers.
 - (C) 4 chambers.
 - (D) 5 chambers.

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12. White blood cells
(A) produce antibodies.
(B) fight infections.
(C) carry oxygen and carbon dioxide.
(D) both A and B
13. A measureable amount of protein can be found in all of the following foods EXCEPT
(A) eggs.
(B) meat.
(C) peas.
(D) apples.
14. What is the most abundant element, by mass, in the Earth's crust?
(A) carbon
(B) oxygen
(C) gold
(D) salt
15. Osmosis is
(A) diffusion of water.
(B) transfer of oxygen.
(C) low blood sugar.
(D) protein.
16. A meter consists of
(A) 10 centimeters.
(B) 100 millimeters.
(C) 100 centimeters.
(D) 10 millimeters.
17. One light-year is
(A) the distance traveled by light in one year.
(B) the brightness of light at 30,000 miles.
(C) 17 standard Earth years.
(D) Spock's birthday.
18. Electrons are particles that are
(A) positively charged.
(B) neutral.
(C) able to move freely.
(D) negatively charged.
19. The asteroid belt is located
(A) around Mercury.
(B) between Mars and Jupiter.
(C) inside the orbit of Venus.
(D) There is no such thing as an asteroid belt.
20. The atomic number of an atom is determined by
(A) the size of its nucleus.
(B) the number of protons.
(C) the number of electrons.
(D) its location in the periodic table.
21. The "control center" of a cell is called the
(A) nucleus.
(B) compound.
(C) mitochondria.
(D) atom.
22. How many planets in the solar system have rings?
(A) one
(B) two
(C) three
(D) four
23. The temperature at which a substance's solid and liquid states exist in equilibrium is its
(A) melting point.
(B) boiling point.
(C) anti-freezing point.
(D) concentration point.

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24. The atmosphere of Mars is composed mostly of
(A) oxygen.
(B) carbon dioxide.
(C) helium.
(D) Mars has no atmosphere.
25. Not counting the sun, the closest star to the Earth is
(A) Rigel.
(B) Proxima Centauri.
(C) Antares.
(D) Betelgeuse.



Subtest 2: Arithmetic Reasoning

Time: 36 minutes for 30 questions

Directions: This test contains questions about arithmetic. Each question is followed by four possible answers. Decide which answer is correct and then mark the space on your answer sheet that has the same number and letter as your choice. Use scratch paper for any figuring you want to do. A calculator is not allowed.

1. If a car is towed 12 miles to the repair shop and the tow charge is \$3.50 per mile, how much does the tow cost?
(A) \$12.00
(B) \$3.50
(C) \$42.00
(D) \$100.00
2. The sum of two numbers is 70. One number is 8 more than the other. What's the smaller number?
(A) 31
(B) 33
(C) 35
(D) 36
3. A sales manager buys antacid in bottles by the gross. If he goes through 3 bottles of antacid every day, how long will the gross last?
(A) 144 days
(B) 3 days
(C) 20 days
(D) 48 days
4. Jenny's test grades are 93, 89, 96, and 98. If she wishes to raise her average to 95, what does she need to score on her next test?
(A) 100
(B) 99
(C) 97
(D) 95
5. A waitress earns an average tip of 12% of the cost of the food she serves. If she serves \$375 worth of food in one evening, how much money in tips will she earn on average?
(A) \$37
(B) \$45
(C) \$42
(D) \$420
6. How many square feet of carpeting are needed to carpet a 12-foot x 12-foot room?
(A) 24
(B) 120
(C) 48
(D) 144
7. Carpet stain protector costs \$0.65 per square yard to apply. How much will it cost to apply the protector to a 16-foot x 18-foot carpet?
(A) \$187.20
(B) \$62.40
(C) \$20.80
(D) \$96.00
8. A printing plant that produces baseball cards has a monthly overhead of \$6,000. It costs 18 cents to print each card, and the cards sell for 30 cents each. How many cards must the printing plant sell each month in order to make a profit?
(A) 30,000
(B) 40,000
(C) 50,000
(D) 60,000

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9. Joe received an hourly wage of \$8.15. His boss gave him a 7% raise. How much does Joe make per hour now?
- (A) \$0.57
(B) \$8.90
(C) \$8.72
(D) \$13.85
10. Alice leaves her house, driving east at 45 miles per hour (mph). Thirty minutes later, her husband Dave notices she forgot her cell phone and sets off after her. How fast must Dave travel in order to catch up with Alice 3 hours after he leaves?
- (A) 49 mph
(B) 50.5 mph
(C) 52.5 mph
(D) 54 mph
11. A baker made 20 pies. A Boy Scout troop buys one-fourth of his pies, a preschool teacher buys one-third of his pies, and a caterer buys one-sixth of his pies. How many pies does the baker have left?
- (A) $\frac{3}{4}$
(B) 15
(C) 12
(D) 5
12. Miriam bought five cases of motor oil on sale. A case of motor oil normally costs \$24.00, but she was able to purchase the oil for \$22.50 a case. How much money did Miriam save on her entire purchase?
- (A) \$7.50
(B) \$1.50
(C) \$8.00
(D) \$22.50
13. A security guard walks the equivalent of six city blocks when he makes a circuit around the building. If he walks at a pace of eight city blocks every 30 minutes, how long will it take him to complete a circuit around the building, assuming he doesn't run into any thieves?
- (A) 20.00 minutes
(B) 3.75 minutes
(C) 22.50 minutes
(D) 7.5 minutes
14. The population of Grand Island, Nebraska, grew by 600,000 people between 1995 and 2005, one-fifth more than the town council predicted. The town council originally predicted the city's population would grow by
- (A) 400,000
(B) 500,000
(C) 300,000
(D) 100,000
15. Joan is taking an admissions examination. If she has to get at least 40 of the 60 questions right to pass, what percent of the questions does she need to answer correctly?
- (A) 30%
(B) 40%
(C) $66\frac{1}{3}\%$
(D) $66\frac{2}{3}\%$
16. A teacher deposits \$3,000 in a retirement fund. If she doesn't add any more money to the fund, which earns an annual interest rate of 6%, how much money will she have in 1 year?
- (A) \$180
(B) \$3,006
(C) \$3,180
(D) \$6,000
17. The high school track measures one-quarter of a mile around. How many laps would you have to run in order to run three and a half miles?
- (A) 12
(B) 14
(C) 16
(D) 18
18. Karl is driving in Austria, where the speed limit is posted in kilometers per hour. The car's speedometer shows that he's traveling at a rate of 75 kilometers per hour. Karl knows that a kilometer is about $\frac{5}{8}$ of a mile. Approximately how many miles per hour is Karl traveling?
- (A) 47
(B) 120
(C) 50
(D) 53

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19. A carpenter earns \$12.30 an hour for a 40-hour week. His overtime pay is $1\frac{1}{2}$ times his base pay. If he puts in a 46-hour week, how much is his weekly pay?
- (A) \$602.70
(B) \$492.00
(C) \$565.80
(D) \$110.70
20. An office building has 30 employees and provides 42 square feet of work space per employee. If five more employees are hired, how much less work space will each employee have?
- (A) 6 square feet
(B) 7 square feet
(C) 7.5 square feet
(D) 36 square feet
21. Stan bought a monster truck for \$2,000 down and payments of \$450 a month for five years. What's the total cost of the monster truck?
- (A) \$4,250
(B) \$29,000
(C) \$27,000
(D) \$34,400
22. Darla spent \$120.37 on groceries in January, \$108.45 in February, and \$114.86 in March. What was the average monthly cost of Darla's groceries?
- (A) \$343.68
(B) \$110.45
(C) \$114.86
(D) \$114.56
23. Keith is driving from Reno to Kansas City to meet his girlfriend. The distance between the two cities is 1,650 miles. If Keith can average 50 miles per hour, how many hours will it take him to complete his trip?
- (A) 8 hours
(B) 30 hours
(C) 33 hours
(D) 82 hours
24. Michael needs 55 gallons of paint to paint an apartment building. He would like to purchase the paint for the least amount of money possible. Which of the following should he buy?
- (A) two 25-gallon buckets at \$550 each
(B) eleven 5-gallon buckets at \$108 each
(C) six 10-gallon buckets at \$215 each
(D) fifty-five 1-gallon buckets at \$23 each
25. As a member of FEMA, you're required to set up a contingency plan to supply meals to residents of a town devastated by a tornado. A breakfast ration weighs 12 ounces and the lunch and dinner rations weigh 18 ounces each. Assuming a food truck can carry 3 tons and that each resident will receive 3 meals per day, how many residents can you feed from one truck during a 10-day period?
- (A) 150 residents
(B) 200 residents
(C) 250 residents
(D) 300 residents
26. A train headed south for Wichita left the station at the same time a train headed north for Des Moines left the same station. The train headed for Wichita traveled at 55 miles per hour. The train headed for Des Moines traveled at 70 miles per hour. How many miles apart are the trains at the end of 3 hours?
- (A) 210 miles
(B) 165 miles
(C) 125 miles
(D) 375 miles
27. A carpenter needs to cut four sections, each 3 feet, 8 inches long, from a piece of molding. If the board is only sold by the foot, what's the shortest length of board she can buy?
- (A) 15 feet
(B) 14 feet
(C) 16 feet
(D) 12 feet

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28. Kiya had only one coupon for 10% off one frozen turkey breast. The turkey breasts cost \$8.50 each, and Kiya wanted to buy two. How much did she pay?
- (A) \$16.15
(B) \$17.00
(C) \$15.30
(D) \$7.65
29. A recruiter travels 1,100 miles during a 40-hour workweek. If she spends $\frac{2}{5}$ of her time traveling, how many hours does she spend traveling?
- (A) 22
(B) $5\frac{1}{2}$
(C) 16
(D) 8
30. Your car uses gasoline at the rate of 21 miles per gallon. If gasoline costs \$2.82 per gallon and you drive for 7 hours at a speed of 48 miles per hour, how much will you pay for gasoline for the trip?
- (A) \$38.18
(B) \$45.12
(C) \$47.73
(D) 59.27



Subtest 3: Word Knowledge

Time: 11 minutes for 35 questions

Directions: This test is about the meanings of words. Each question has a word underlined. You may be asked to decide which one of the four words in the choices *most nearly means* the same thing as the underlined word or which one of the four words means the opposite. If the underlined word is used in a sentence, decide which of the four choices most nearly means the same thing as the underlined word, as used in the context of the sentence. Mark the corresponding space on your answer sheet.

1. Tim promised to meet us at the apex.
(A) top
(B) bottom
(C) canyon
(D) river
2. Assimilate most nearly means
(A) absorb.
(B) react.
(C) pretend.
(D) lie.
3. Brittle most nearly means
(A) soft.
(B) fragile.
(C) study.
(D) hard.
4. Datum most nearly means
(A) fiscal year date.
(B) congruence.
(C) fact.
(D) positive result.
5. The exchange student was proficient in French, German, and English.
(A) poor
(B) knowledgeable
(C) adept
(D) exacting
6. The judge imposed a severe penalty due to Tom's actions.
(A) scheduled
(B) made an example of
(C) levied
(D) questioned
7. Mary went to the store and bought peanuts galore.
(A) abundant
(B) salty
(C) on sale
(D) roasted
8. He ran headlong into the fight.
(A) headfirst
(B) reluctantly
(C) happily
(D) recklessly
9. Frugal most nearly means
(A) quiet.
(B) amazing.
(C) delayed.
(D) economical.
10. The word most opposite in meaning to stimulate is
(A) support.
(B) arrest.
(C) travel.
(D) dislike.

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11. Licit most nearly means
(A) historical.
(B) lawful.
(C) storied.
(D) willfully.
12. Vacate most nearly means
(A) crawl.
(B) impel.
(C) exhume.
(D) leave.
13. The sergeant gave his reasoned opinion.
(A) irate
(B) logical
(C) impressive
(D) uninformed
14. Tacit most nearly means
(A) loud.
(B) understood.
(C) commendable.
(D) transparent.
15. The brass was not burnished.
(A) yellow
(B) dull
(C) expensive
(D) polished
16. The commodity was sold.
(A) product
(B) stock
(C) idea
(D) table
17. Her motives were contrived.
(A) premeditated
(B) emotional
(C) obscure
(D) amusing
18. Supplicate most nearly means
(A) make superior.
(B) to be unnecessary.
(C) to beg.
(D) to be expansive.
19. The word most opposite in meaning to hypocrisy is
(A) honesty.
(B) happy.
(C) angry.
(D) threatening.
20. Bob found the peaches to be extremely succulent.
(A) large
(B) tasteless
(C) old
(D) juicy
21. The Army soldiers were ordered to immediate garrison duty.
(A) field
(B) combat
(C) latrine
(D) fort
22. Furtherance most nearly means
(A) advancement.
(B) finance.
(C) practicality.
(D) destruction.
23. Domicile most nearly means
(A) office.
(B) shopping.
(C) home.
(D) vacation.
24. Abrogate most nearly means
(A) recover.
(B) aid.
(C) foreclose.
(D) abolish.

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25. Compensation most nearly means
(A) religion.
(B) commission.
(C) boathouse.
(D) shower.
26. He gave a brusque account of the events.
(A) passionate
(B) lengthy
(C) uncensored
(D) concise
27. The vote resulted in the demise of the proposed new law.
(A) passage
(B) death
(C) postponement
(D) abatement
28. We commemorated our veterans during the ceremony.
(A) denied
(B) remembered
(C) thanked
(D) took pictures of
29. Bore most nearly means
(A) deepen.
(B) hide.
(C) burrow.
(D) jump.
30. That custom still prevails.
(A) angers
(B) persists
(C) surprises
(D) excites
31. Defray most nearly means
(A) invade.
(B) obstruct.
(C) pay.
(D) reverse.
32. Chasm most nearly means
(A) abyss.
(B) sky.
(C) mountain.
(D) valley.
33. Fundamental most nearly means
(A) radical.
(B) religious.
(C) basic.
(D) excessive.
34. Susceptible most nearly means
(A) travel.
(B) resistant.
(C) limited.
(D) vulnerable
35. Emblem most nearly means
(A) symbol.
(B) picture.
(C) statue.
(D) religion.



DO NOT TURN THE PAGE UNTIL TOLD TO DO SO.
DO NOT RETURN TO A PREVIOUS TEST.

Subtest 4: Paragraph Comprehension

Time: 13 minutes for 15 questions

Directions: This test contains items that measure your ability to understand what you read. This section includes one or more paragraphs of reading material followed by incomplete statements or questions. Read the paragraph and select the choice that best completes the statement or answers the question. Mark your choice on your answer sheet, using the correct letter with each question number.

An important stage of personal time management is to take control of appointments. Determined by external obligation, appointments constitute interaction with other people and an agreed-on interface between your activities and those of others. Start with a simple appointment diary. List all appointments, including regular and recurring ones. Now, be ruthless and eliminate the unnecessary. There may be committees where you can't productively contribute or where a subordinate may be able to participate. Eliminate the waste of your time.

1. Effectively managing your appointments allows you to
 - (A) spend more time with your subordinates.
 - (B) delegate responsibility to subordinates.
 - (C) make more efficient use of your time.
 - (D) attend only the most important meetings.

2. According to this passage,
 - (A) there are equal numbers of senators and representatives.
 - (B) the number of representatives from each state is decided by a lottery.
 - (C) it's possible for a state to have no representatives.
 - (D) senators and representatives have different term lengths.

The U.S. Congress consists of 100 senators and 435 representatives. Two senators are elected from each state. The number of representatives from each state is based on population, although each state has at least one representative. Senators serve six-year terms, and representatives serve two-year terms.

Indo-European languages consist of those languages spoken by most of Europe and in those parts of the world that Europeans have colonized since the 16th century (such as the United States). Indo-European languages are also spoken in India, Iran, parts of western Afghanistan, and in some areas of Asia.

3. The author of this passage would agree that
 - (A) Indo-European languages are spoken in areas all over the world.
 - (B) Indo-European languages include all the languages spoken in the world.
 - (C) only Europeans speak Indo-European languages.
 - (D) Indo-European language speakers can easily understand one another.

In privatization, the government relies on the private sector to provide a service. However, the government divests itself of the entire process, including all assets. With privatized functions, the government may specify quality, quantity, and timeliness requirements, but it has no control over the operations of the activity. Also, the government may not be the only customer. Whoever the government chooses to provide the services would likely provide the same services to others.

4. This paragraph best supports the statement that
 - (A) the government must closely supervise privatized functions.
 - (B) privatized functions consist of a mixture of government employees, military personnel, and private contractors.
 - (C) privatized functions are those institutions that provide services only to a government agency.
 - (D) privatized functions provide essential services to the government.

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The success or failure of a conference lies largely with its leader. A leader's zest and enthusiasm must be real, apparent, and contagious. The leader is responsible for getting the ball rolling and making the attendees feel as if the meeting is theirs and its success depends on their participation. A good, thorough introduction helps establish the right climate.

5. A good title to this paragraph would be
- "Lead by Example."
 - "The Importance of Proper Introductions."
 - "Leading a Successful Conference."
 - "Conference Participation Basics."

Cloud seeding is accomplished by dropping particles of dry ice (solid carbon dioxide) from a plane onto super-cooled clouds. This process encourages condensation of water droplets in the clouds, which usually, but not always, results in rain or snow.

6. From this passage, it's reasonable to assume that
- cloud seeding could be used to end a drought.
 - cloud seeding is prohibitively expensive.
 - cloud seeding is rarely used.
 - cloud seeding can be accomplished by using regular ice.

To write or not to write — that is the question. If assigned a writing task, there's no option. However, if someone is looking for a specific answer, find out if they need a short answer or a detailed one. Can the requirement be met with a telephone call, e-mail, or short note, or is something more necessary? A former CEO of a major corporation once commented that he had looked at 13,000 pieces of paper in a 5-day period. Think how much easier and more economical it would be if people would use the telephone, send an e-mail, or write a short note.

7. The main point of this passage is that
- written records are important because they provide detailed documentation.
 - more businesspeople should invest time and energy improving their writing skills.
 - writing may not be the best way to communicate information.
 - it's pointless for businesspeople to spend time improving their writing skills.

The transistor, a small, solid-state device that can amplify sound, was invented in 1947. At first, it was too expensive and too difficult to produce to be used in cheap, mass-market products. By 1954, though, these cost and production problems had been overcome, and the first transistor radio was put on the market.

8. According to this passage,
- there was no market for transistors before 1954.
 - when transistors could be produced cheaply and easily, the transistor radio was put on the market.
 - transistors were invented in 1947 by order of the Department of Defense.
 - transistors are still expensive to produce.

I returned from the City about three o'clock on that May afternoon pretty well disgusted with life. I had been three months in the Old Country and was fed up with it. If people had told me a year ago that I would've been feeling like that I should've laughed at them; but there was the fact. The weather made me liverish, the talk of the ordinary Englishman made me sick, I couldn't get enough exercise, and the amusements of London seemed as flat as soda water that had been standing in the sun.

9. The author is speaking of his travels in
- Spain.
 - Great Britain.
 - Germany.
 - Scotland.

Surveys show that the average child under the age of 18 watches four hours of television per day. Although some of the programming may be educational, most isn't. Spending this much time watching television interferes with a child's ability to pursue other interests, such as reading, participating in sports, and playing with friends.

10. The author of this passage would agree that
- television viewing should be restricted.
 - parents who let their children watch this much television are neglectful.
 - reading, participating in sports, playing with friends, and watching television should all be given equal time.
 - adults over 18 can watch as much television as they want.



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Questions 11 and 12 are based on the following passage.

High school and college graduates attempting to find jobs should participate in mock job interviews. These mock interviews help students prepare for the types of questions they'll be asked, make them more comfortable with common interview formats, and help them critique their performance before facing a real interviewer. Because they're such a valuable aid, schools should organize mock job interviews for all of their graduating students.

11. The above passage states that mock job interviews
 - (A) frighten students.
 - (B) should be offered to the best students.
 - (C) help prepare students for real job interviews.
 - (D) should be organized by students.
12. From the above passage, it is reasonable to assume that
 - (A) mock interviews can increase a student's confidence when he or she goes into a real job interview.
 - (B) mock interviews are expensive to organize.
 - (C) few students are interested in mock interviews.
 - (D) students don't need job interview preparation.

Questions 13 through 15 are based on the following passage.

Due process, the guarantee of fairness in the administration of justice, is part of the 5th Amendment to the U.S. Constitution. The 14th Amendment further requires states to abide by due process. After this amendment was enacted, the U.S. Supreme Court struck down many state laws that infringed on the civil rights guaranteed to citizens in the Bill of Rights.

13. According to the above passage, due process
 - (A) is an outdated concept.
 - (B) guarantees fairness in the justice system.
 - (C) never became part of the U.S. Constitution.
 - (D) is the process by which winning lottery tickets are selected.
14. According to the above passage, it's reasonable to assume that the 5th Amendment
 - (A) is about taxes.
 - (B) guarantees due process in all criminal and civil cases.
 - (C) guarantees due process in federal law.
 - (D) should never have become part of the Bill of Rights.
15. The author of the above passage would agree that
 - (A) without the passage of the 14th Amendment, many laws restricting civil rights would still exist in various states.
 - (B) the Supreme Court overstepped its jurisdiction when it struck down laws infringing on citizens' civil rights.
 - (C) the Supreme Court had every right to strike down state laws before the passage of the 14th Amendment.
 - (D) the 14th Amendment was opposed by all states.



Subtest 5: Mathematics Knowledge

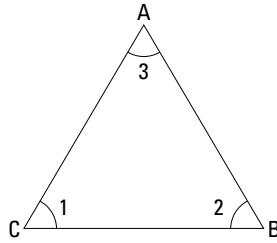
Time: 24 minutes for 25 questions

Directions: This section tests your ability to solve general mathematical problems. Select the correct answer from the choices given, and then mark the corresponding space on your answer sheet. Use scratch paper to do any figuring.

1. If $x = 8$, what's the value of y in the equation $y = (x^2 \div 4) - 2$?
 - (A) 14
 - (B) 16
 - (C) 18
 - (D) 20
2. The cube of 5 is
 - (A) 125
 - (B) 25
 - (C) 15
 - (D) 50
3. $2.5 \times 3^3 =$
 - (A) 22.5
 - (B) 75.0
 - (C) 67.5
 - (D) 675.0
4. The fourth root of 16 is
 - (A) 4
 - (B) 1
 - (C) 3
 - (D) 2
5. What's the equation of a line that passes through points $(0, -1)$ and $(2, 3)$?
 - (A) $y = 2x - 1$
 - (B) $y = 2x + 1$
 - (C) $x = 2y - 1$
 - (D) $x = 2y + 1$
6. $(12 \text{ yards} + 14 \text{ feet}) \div 5 =$
 - (A) 12 feet
 - (B) $5\frac{1}{5}$ feet
 - (C) 10 feet
 - (D) $2\frac{1}{2}$ yards
7. $x^3 \cdot x^4 =$
 - (A) x^{12}
 - (B) $2x^7$
 - (C) $2x^{12}$
 - (D) x^7
8. $(x + 4)(x + 2) =$
 - (A) $x^2 + 6x + 6$
 - (B) $x^2 + 8x + 8$
 - (C) $x^2 + 8x + 6$
 - (D) $x^2 + 6x + 8$
9. $1.5 \times 10^3 =$
 - (A) 45
 - (B) 150
 - (C) 1,500
 - (D) 15
10. Which of the following is a prime number?
 - (A) 27
 - (B) 11
 - (C) 8
 - (D) 4
11. What's the mode of the following series of numbers? 4 4 8 8 8 10 10 12 12
 - (A) 9
 - (B) 8
 - (C) 11
 - (D) 10
12. If $a = 4$, then $a^3 \div a =$
 - (A) 4
 - (B) 12
 - (C) 64
 - (D) 16

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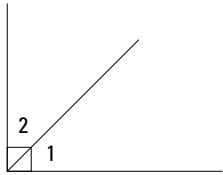
13. Solve: $5!$
- (A) 25
 (B) 125
 (C) 120
 (D) 15
14. $(900 \times 2) \div 6 =$
- (A) 30
 (B) 300
 (C) 150
 (D) 3,000
15. If $x = 2$, then $x^x(x) =$
- (A) 8
 (B) $2x^x$
 (C) 4
 (D) 6
16. If $(5 + 1)(6 \div 3)(8 - 5) = (3 + 3)x$, then $x =$
- (A) 12
 (B) 3
 (C) 4
 (D) 6
17. $\sqrt{49} \times \sqrt{64} =$
- (A) 56
 (B) 15
 (C) 42
 (D) 3,136
18. Which of the following fractions is the largest?
- (A) $\frac{2}{5}$
 (B) $\frac{3}{8}$
 (C) $\frac{7}{10}$
 (D) $\frac{13}{16}$
19. If $2 + x \geq 4$, then $x \geq$
- (A) 6
 (B) 2
 (C) 4
 (D) $\frac{1}{2}$
20. If a circle has a radius of 12 feet, what's its circumference most nearly?
- (A) 24 feet
 (B) 72 feet
 (C) 75 feet
 (D) 36 feet
21. An aquarium measures 16 inches long x 8 inches deep x 18 inches high. What's its volume?
- (A) 2,304 cubic inches
 (B) 128 cubic inches
 (C) 42 cubic inches
 (D) 288 cubic inches
22. Triangle ABC is a(n)



- (A) right triangle.
 (B) obtuse triangle.
 (C) equilateral triangle.
 (D) isosceles triangle.
23. The sum of the measures of the angles of a trapezoid is
- (A) 360 degrees.
 (B) 540 degrees.
 (C) 180 degrees.
 (D) 720 degrees.

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24. Angles 1 and 2 are



- (A) supplementary.
- (B) complementary.
- (C) both obtuse.
- (D) both right angles.

25. Convert 24% to a fraction.

- (A) $\frac{6}{25}$
- (B) $\frac{1}{25}$
- (C) $\frac{6}{24}$
- (D) $\frac{1}{24}$



Subtest 6: Electronics Information

Time 9 minutes for 20 questions

Directions This test contains questions to challenge your knowledge of electrical, radio, and electronics information. Select the correct response from the choices given and then mark the corresponding space on your answer sheet.

1. Ohm's law states
 - (A) Voltage = Current × Resistance
 - (B) Amperes = Current × Resistance
 - (C) Voltage = Resistance ÷ Amperes
 - (D) Ohms = Current ÷ Voltage
2. A resistor's first three color bands are brown, black, and red. What is its value?
 - (A) 1,000 ohms
 - (B) 500 ohms
 - (C) 500 volts
 - (D) 50 volts
3. In the U.S., all metal equipment, electrical or not, connected to a swimming pool must be
 - (A) freestanding.
 - (B) bonded together.
 - (C) certified.
 - (D) none of the above
4. Voltage can also be expressed as
 - (A) watts.
 - (B) amps.
 - (C) current.
 - (D) electrical potential difference.
5. Newer cell phones contain a removable memory card, which is often called a
 - (A) SIM card.
 - (B) DIM chip.
 - (C) PIN card.
 - (D) PIN chip.
6. Made from a variety of materials, such as carbon, this inhibits the flow of current.
 - (A) resistor
 - (B) diode
 - (C) transformer
 - (D) generator
7. This is a type of semiconductor that only allows current to flow in one direction. It is usually used to rectify AC signals (conversion to DC).
 - (A) capacitor
 - (B) inductor
 - (C) diode
 - (D) transformer
8. Radar can operate at frequencies as high as
 - (A) 100,000 Hz.
 - (B) 100,000 kHz.
 - (C) 100,000 MHz.
 - (D) 500,000 MHz.
9. What do AC and DC stand for in the electrical field?
 - (A) amplified capacity and differential capacity
 - (B) alternating current and direct current
 - (C) accelerated climate and deduced climate
 - (D) none of the above
10. Changing AC to DC is called what?
 - (A) capacitance.
 - (B) impedance.
 - (C) rectification.
 - (D) induction.

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11. A 5,000 BTU air conditioner can efficiently cool up to 150 square feet, or a 10-foot x 15-foot room. What does BTU stand for?
(A) basic thermal unit
(B) basic temperature unit
(C) British thermal unit
(D) none of the above
12. Which is the most correct definition of current?
(A) the measure of electrical pressure
(B) the amount of electricity used in a heater
(C) the electricity used in heating a kilo of water
(D) the presence of electron flow
13. A device that transforms energy from one form to another is called
(A) a capacitor.
(B) a transducer.
(C) a transformer.
(D) magic.
14. Which one of the following is an active element?
(A) 15 kΩ resistor
(B) 10 mH inductor
(C) 25 pF capacitor
(D) 10 V power supply
15. A light bulb is 60 watts. Operated at 120 volts, how much current does it draw?
(A) 0.5 amperes
(B) 5.0 amperes
(C) 50.0 amperes
(D) 7,200 amperes
16. A number-12 wire, compared to a number-6 wire,
(A) is longer.
(B) is shorter.
(C) is smaller in diameter.
(D) is larger in diameter.
17. A fuse with a higher-than-required rating used in an electrical circuit
(A) improves safety.
(B) increases maintenance.
(C) may not work properly.
(D) is less expensive.
18. Neutral wire is always
(A) whitish or natural.
(B) black.
(C) green with stripes
(D) blue.
19. To measure electrical power, you would use a(n)
(A) ammeter.
(B) ohmmeter.
(C) voltmeter.
(D) wattmeter.
20. What will happen if you operate an incandescent light bulb at less than its rated voltage?
(A) The bulb will burn brighter and last longer.
(B) The bulb will burn dimmer and last longer.
(C) The bulb will burn brighter but won't last as long.
(D) The bulb will burn dimmer but won't last as long.



DO NOT TURN THE PAGE UNTIL TOLD TO DO SO.
DO NOT RETURN TO A PREVIOUS TEST.

Subtest 7: Auto & Shop Information

Time: 11 minutes for 25 questions

Directions: This test is about automobiles, shop practices, and the use of tools. Pick the best answer for each question and then mark the corresponding space on your answer sheet.

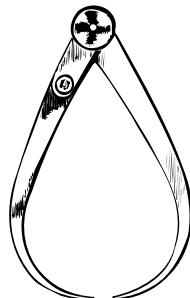
1. Overheating the engine can cause all of the following problems EXCEPT
(A) burned engine bearings.
(B) enlarged pistons.
(C) melted engine parts.
(D) improved fuel efficiency.
2. The device that converts an automobile's mechanical energy to electrical energy is called the
(A) converter.
(B) alternator.
(C) battery.
(D) brakes.
3. A primary advantage of the electronic ignition system over conventional ignition systems is that
(A) the electronic ignition system is less expensive to repair.
(B) the electronic ignition system requires a lower voltage to provide a higher voltage for spark
(C) the electronic ignition system allows for use of a lower octane fuel.
(D) all of the above
4. The primary purpose of piston rings is to
(A) seal the combustion chamber and allow the pistons to move freely.
(B) connect the piston to the crankshaft.
(C) allow fuel to enter the piston cylinder.
(D) provide lubrication to the piston cylinder.
5. The crankshaft typically connects to a
(A) flywheel.
(B) fuel pump.
(C) muffler.
(D) battery.
6. What component allows the left and right wheels to turn at different speeds when cornering?
(A) differential
(B) camshaft
(C) valve rotator
(D) battery
7. If a car's ignition system, lights, and radio don't work, the part that's probably malfunctioned is the
(A) cylinder block.
(B) water pump.
(C) carburetor.
(D) battery.
8. A good tool to cut intricate shapes in wood would be a
(A) ripsaw.
(B) hacksaw.
(C) coping saw.
(D) pocket knife.
9. A two-stroke engine will normally be found on
(A) small cars.
(B) large diesel trucks.
(C) trucks, vans, and some cars.
(D) snowmobiles, chainsaws, and some motorcycles.
10. A belt sander would best be used to
(A) cut wood.
(B) finish wood.
(C) shape wood.
(D) keep your pants up.

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11. A car equipped with limited-slip differential
(A) can be readily put into all-wheel (four-wheel) drive.
(B) won't lock up when the brakes are applied steadily.
(C) transfers the most driving force to the wheel with the greatest amount of traction.
(D) is rated for off-road driving.
12. Big block engines generally have
(A) more than 5.9 L of displacement.
(B) better gas mileage than small block engines.
(C) less than 6 L of displacement.
(D) air conditioning.
13. A good tool for spreading and/or shaping mortar would be a
(A) cement shaper.
(B) hammer.
(C) trowel.
(D) broom.
14. Plumb-bobs are used to
(A) clean pipes.
(B) check vertical reference.
(C) fix the toilet.
(D) carve stones.
15. Rebar is used to
(A) measure the depth of concrete.
(B) reinforce concrete.
(C) stir concrete.
(D) smooth concrete.
16. Annular ring, clout, and spring head are types of
(A) hammers.
(B) saws.
(C) nails.
(D) screwdrivers.
17. A ripsaw cuts
(A) against the grain of the wood.
(B) with the grain of the wood.
(C) most materials, including metal.
(D) only plastic.
18. A cam belt is also known as a
(A) piston.
(B) timing belt.
(C) transmission belt.
(D) lug nut.
19. To check for horizontal trueness, the best tool to use is a
(A) steel tape rule.
(B) plumb bob.
(C) level.
(D) sliding T-bevel.
20. A bucking bar is used to
(A) pull nails.
(B) pry wood apart.
(C) form rivet bucktails.
(D) drive screws.
21. Washers that have teeth all around the circumference to prevent them from slipping are called
(A) shake-proof washers.
(B) jaw washers.
(C) flat washers.
(D) split-lock washers.

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22. The tool below measures



- (A) an inside curve.
- (B) an outside curve.
- (C) the depth of a hole.
- (D) the thickness of wire.

23. The object below is a type of



- (A) nut.
- (B) washer.
- (C) screw.
- (D) bolt.

24. The tool below is used to



- (A) finish concrete.
- (B) spread joint compound.
- (C) smooth wallpaper.
- (D) dress wood.

25. The chisel used to cut metal is

- (A)
- (B)
- (C)
- (D)



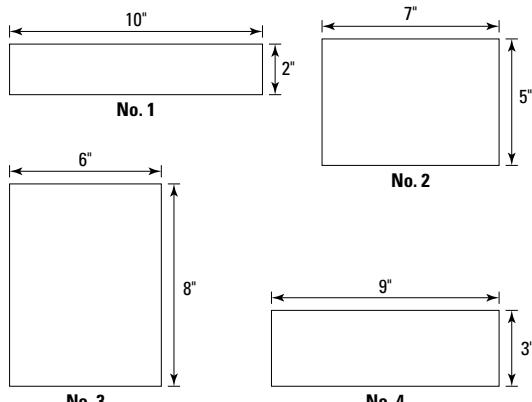
Subtest 8: Mechanical Comprehension

Time: 19 minutes for 25 questions

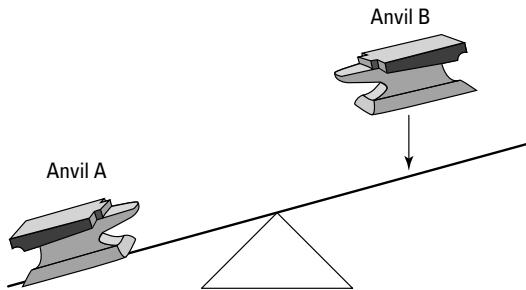
Directions: This test is about mechanical principles. Many of the questions use drawings to illustrate specific principles. Choose the correct answer and mark the corresponding space on the answer sheet.

1. An induction clutch works by
 - (A) magnetism.
 - (B) pneumatics.
 - (C) hydraulics.
 - (D) friction.

2. If a first-class lever with a resistance arm measuring 2 feet and an effort arm measuring 8 feet are being used, what's the mechanical advantage?
 - (A) 2
 - (B) 4
 - (C) 6
 - (D) 1

3. The bottoms of four boxes are shown below. The boxes all have the same volume. If postal regulations state that the sides of a box must meet a minimum height, which box is most likely to be too short to go through the mail?
 
 - (A) No. 4
 - (B) No. 2
 - (C) No. 1
 - (D) No. 3

4. Looking at the figure below, when Anvil B lands on the seesaw, Anvil A will



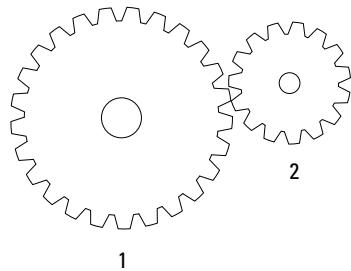
- (A) remain stationary.
- (B) hit the ground hard.
- (C) rise in the air quickly.
- (D) enter the stratosphere.

5. Air pressure at sea level is about 15 psi. What's the amount of force exerted on the top of your head, given a surface area of 24 square inches?
 - (A) 360 pounds
 - (B) 625 pounds
 - (C) $\frac{5}{8}$ pound
 - (D) 180 pounds

6. The force produced when a boxer's hand hits a heavy bag and "bounces" off it is called
 - (A) response time.
 - (B) bounce.
 - (C) recoil.
 - (D) gravity.

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7. In the figure below, if Gear 1 has 25 teeth and Gear 2 has 15 teeth, how many revolutions does Gear 2 make for every 10 revolutions Gear 1 makes?



1

- (A) about $16\frac{2}{3}$
- (B) 12
- (C) about $\frac{1}{3}$ more
- (D) about 20

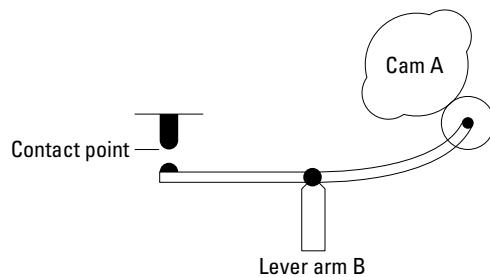
8. A cubic foot of water weighs about 62.5 pounds. If an aquarium is 18 feet long, 10 feet deep, and 12 feet wide, what's the approximate pressure in pounds per square inch (psi) on the bottom of the tank?

- (A) 2 psi
- (B) 4 psi
- (C) 5 psi
- (D) 7 psi

9. Springs used in machines are usually made of
- (A) plastic.
 - (B) bronze.
 - (C) nylon fiber.
 - (D) steel.

10. A clutch is a type of
- (A) universal joint.
 - (B) coupling.
 - (C) gear differential.
 - (D) cam follower.

11. When Cam A completes one revolution, the lever will touch the contact point

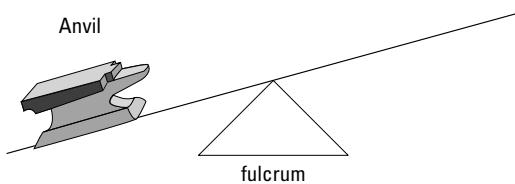


- (A) once.
- (B) never.
- (C) four times.
- (D) twice.

12. A single block-and-fall is called a

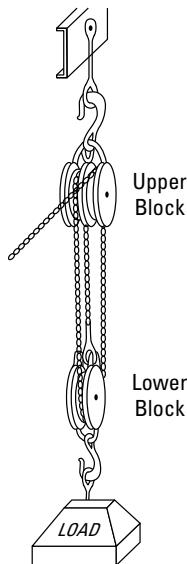
- (A) fixed pulley.
- (B) gun tackle.
- (C) runner.
- (D) sheave.

13. In the figure below, if the fulcrum supporting the lever is moved closer to the anvil, the anvil will be



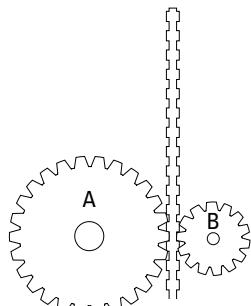
- (A) easier to lift and will move higher.
- (B) harder to lift but will move higher.
- (C) easier to lift but will not move as high.
- (D) harder to lift and will not move as high.

14. The mechanical advantage of the block-and-tackle arrangement shown below is



- (A) 2
(B) 4
(C) 6
(D) 1

15. In the figure below, if the cogs move up the track at the same rate of speed, Cog A will

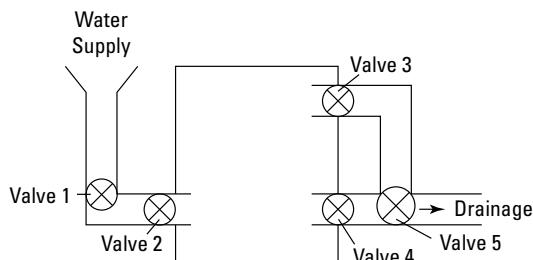


- (A) reach the top at the same time as Cog B.
(B) reach the top after Cog B.
(C) reach the top before Cog B.
(D) have greater difficulty staying on track.

16. If a house key, a wooden spoon, a plastic hanger, and a wool jacket are all the same temperature. On a cool day, which one feels the coldest?

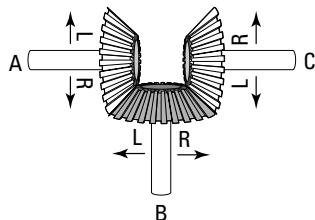
- (A) key
(B) spoon
(C) hanger
(D) jacket

17. In the figure below, assume the valves are all closed. To fill the tank but prevent it from filling entirely, which valves should be open?



- (A) 1 and 2 only
(B) 1, 2, and 3 only
(C) 1, 2, and 4 only
(D) 1, 2, 3, and 5 only

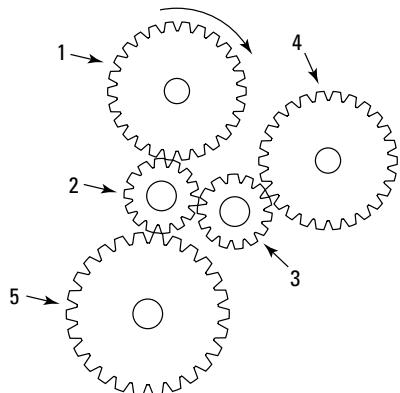
18. If Gear A is turned to the left,



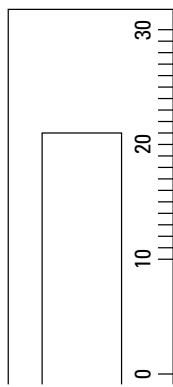
- (A) Gear B turns to the right and Gear C turns to the left.
(B) Gear B turns to the left and Gear C turns to the left.
(C) Gear B turns to the right and Gear C turns to the right.
(D) Gear B turns to the left and Gear C turns to the right.

Go on to next page

19. If Gear 1 moves in a clockwise direction, which other gears also turn clockwise?



- (A) 3 and 5
 (B) 3, 4, and 5
 (C) 2 and 5
 (D) 3 and 4
20. The pressure gauge in the figure below shows a reading of



- (A) 15.0
 (B) 19.5
 (C) 21.0
 (D) 23.0

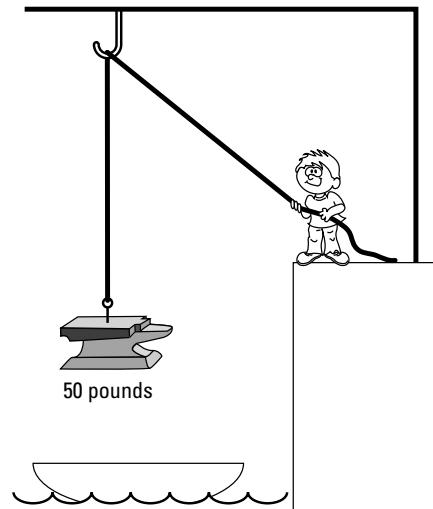
21. A way to determine the amount of power being used is to

- (A) multiply the amount of work done by the time it takes.
 (B) multiply the distance covered by the time it takes to move a load.
 (C) divide the amount of work done by 550 pounds per second.
 (D) divide the amount of work done by the amount of time it takes.

22. A wood tool, a silver tool, and a steel tool are placed in boiling water for cleaning. Which tool will get the hot the fastest?

- (A) steel
 (B) wood
 (C) silver
 (D) All three are equally hot.

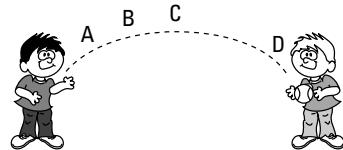
23. A runner is being used in the figure shown. How much effort is the boy who's lifting the 50-pound anvil using? Disregard friction, wind resistance, and the weight of the pulley and the rope.



- (A) 50-pound effort
 (B) 100-pound effort
 (C) 25-pound effort
 (D) 10-pound effort

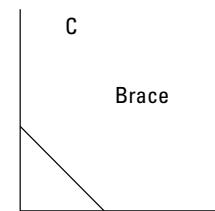
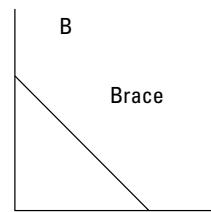
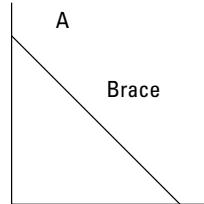
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24. In the figure below, at what point was the ball traveling most slowly?



- (A) A
- (B) B
- (C) C
- (D) D

25. In the figure below, which angle is braced most solidly?



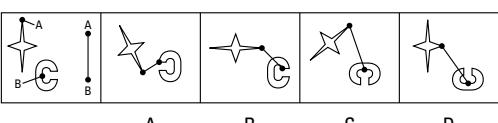
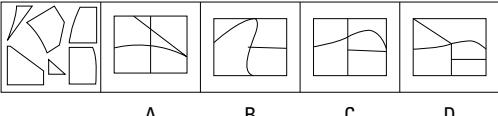
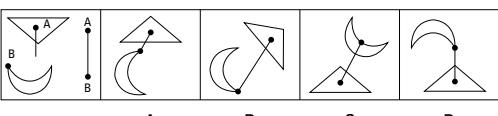
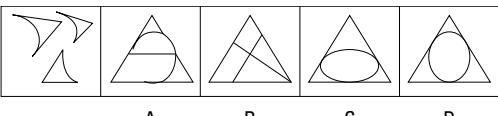
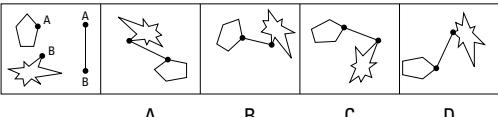
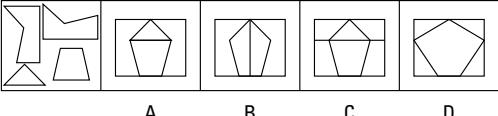
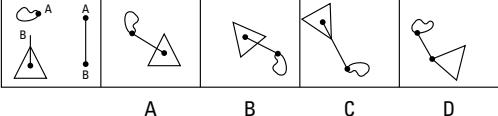
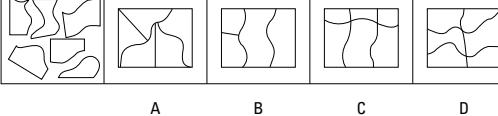
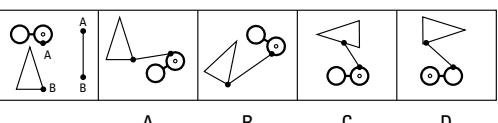
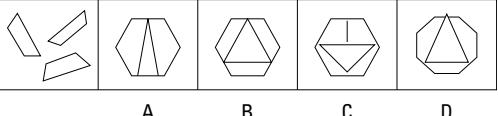
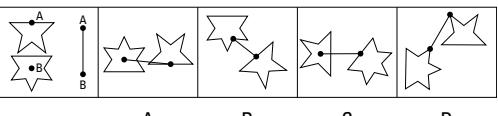
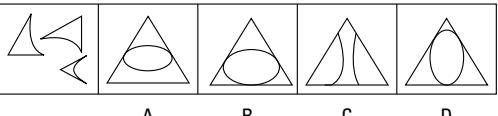
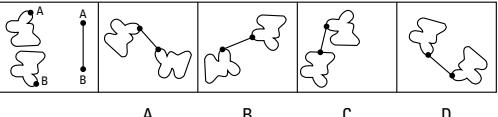
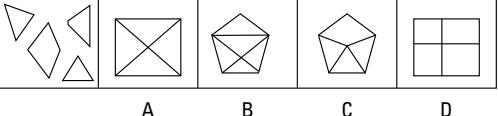
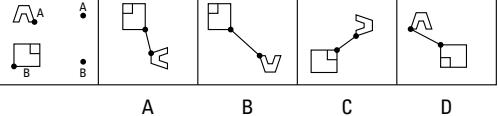
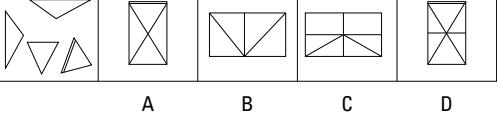
- (A) A
- (B) B
- (C) C
- (D) All are braced equally solidly.



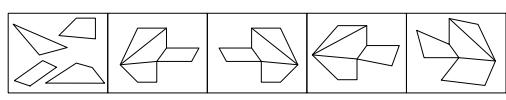
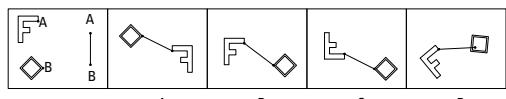
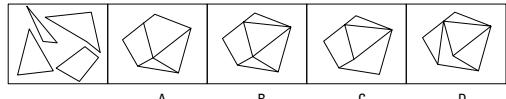
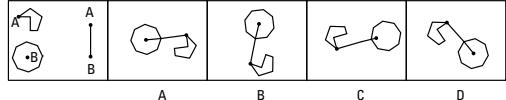
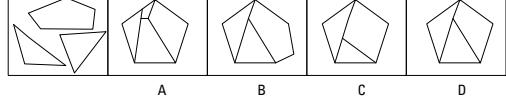
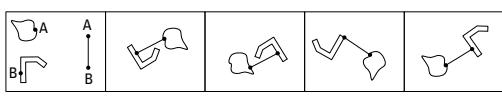
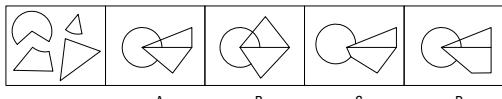
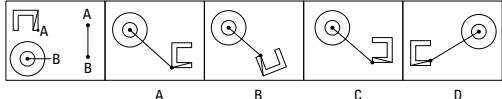
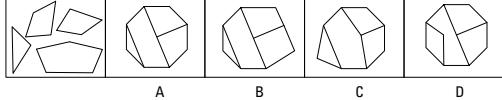
Subtest 9: Assembling Objects

Time: 15 minutes for 25 questions

Directions: The Assembling Objects subtest consists of questions that measure your ability to mentally picture items in two dimensions. Each question is comprised of five separate drawings. The problem is presented in the first drawing, and the remaining four drawings are possible solutions. Determine which of the choices best solves the problem shown in the first picture and then mark the corresponding choice on your answer sheet.

1.  A B C D
2.  A B C D
3.  A B C D
4.  A B C D
5.  A B C D
6.  A B C D
7.  A B C D
8.  A B C D
9.  A B C D
10.  A B C D
11.  A B C D
12.  A B C D
13.  A B C D
14.  A B C D
15.  A B C D
16.  A B C D

Go on to next page

17.  A B C D
18.  A B C D
19.  A B C D
20.  A B C D
21.  A B C D
22.  A B C D
23.  A B C D
24.  A B C D
25.  A B C D



**DO NOT TURN THE PAGE UNTIL TOLD TO DO SO.
DO NOT RETURN TO A PREVIOUS TEST.**

Chapter 17

Practice Exam 1: Answers and Explanations

With the first practice test out of the way, you’re probably anxious to see how well you did. Use the answer keys in this chapter to score yourself on each of the nine subtests. Remember, your scores on this practice exam don’t equate to scores on the actual ASVAB. That’s because on the enlistment ASVAB, you get more points for answering harder questions correctly than you do for easier questions. The test is scored by comparing your raw score to the scores of other people, which produces a scaled score, so missing 20 out of 225 questions doesn’t mean that your score is 205. The practice exam, however, is a valuable tool for determining which subject areas you need to brush up on. (Turn to Chapter 1 to find out how the ASVAB is scored.)

Subtest 1: General Science Answers

The General Science subtest tests your knowledge of science facts. If you missed a few questions, reread the questions and try to figure out where you went wrong. If you missed more than a few questions, review Chapter 10.



General Science is a broad field, but some of the following books may help you: *Chemistry For Dummies* by John T. Moore, *Biology For Dummies* by Donna Rae Siegfried, *Astronomy For Dummies*, 2nd Edition, by Stephen P. Maran, *Weather For Dummies* by John D. Cox, and *Physics I For Dummies* by Steven Holzner. You can find additional practice questions in Chapter 15.

- | | | | | | | | | |
|------|------|------|-------|-------|-------|-------|-------|-------|
| 1. D | 4. A | 7. D | 10. C | 13. D | 16. C | 19. B | 22. D | 25. B |
| 2. C | 5. D | 8. C | 11. C | 14. B | 17. A | 20. B | 23. A | |
| 3. C | 6. D | 9. C | 12. D | 15. A | 18. D | 21. A | 24. B | |

Subtest 2: Arithmetic Reasoning Answers

Arithmetic Reasoning is one of the four ASVAB subtests that make up your Armed Force Qualifying Test (AFQT) score, which determines whether you qualify to join the service branch of your choice (check Appendix A to see whether the jobs you’re interested in require a score in this subtest). If you missed more than five or six questions, dig out that old high school math textbook and wrap your brain around some math problems. Chapters 7 and 8 may also help you out.



Some books that may help you score better on the Arithmetic Reasoning subtest include *Basic Math & Pre-Algebra For Dummies* by Mark Zegarelli, *Algebra For Dummies* and *Algebra II For Dummies* by Mary Jane Sterling, and *Geometry For Dummies* by Mark Ryan, as well as the related workbooks. You can also check out Mark Zegarelli's *SAT Math For Dummies* and Scott and Lisa Hatch's *SAT II Math For Dummies* for some math test practice. Also see Chapter 9 for additional practice questions.

1. **C.** Multiply 12 miles by \$3.50 per mile: $12 \times \$3.50 = \42.00 .
2. **A.** Let x equal the smaller number and $x + 8$ equal the larger number. Because the sum of the two numbers is 70, you can express this mathematically as $x + x + 8 = 70$. Now all you have to do is solve for x . Combine the like terms: $2x + 8 = 70$. Then subtract 8 from both sides of the equation: $2x + 8 - 8 = 70 - 8$, or $2x = 62$. Divide both sides of the equation by 2, and you find that x is equal to 31.
3. **D.** 144 bottles are in a gross, and $144 \div 3$ (bottles per day) = 48 days.
4. **B.** To determine Jenny's average, add the test scores and divide the sum by the number of tests she took. You want to know what she needs on the next test to achieve an average of 95, so let x equal the unknown score. Set up the equation as $(93 + 89 + 96 + 98 + x) \div 5 = 95$. Combine the like terms: $(376 + x) \div 5 = 95$. Multiplying both sides by 5 results in $376 + x = 475$, so $x = 99$.
Choice (A) is very close to the correct answer, but it isn't the best answer. If Jenny's next test score is 100, her average would be raised to 95.2.
5. **B.** Multiply the total amount spent on drinks, \$375, by 12% (or 0.12) to determine the amount of tips: $\$375 \times 0.12 = \45 .
6. **D.** You determine square footage by multiplying length by width: $12 \times 12 = 144$.
7. **C.** First determine the number of square feet of carpet you want to protect: $16 \text{ ft.} \times 18 \text{ ft.} = 288 \text{ ft.}^2$. The carpet stain protector is priced by the square yard, so divide 288 by 9 to convert square feet to square yards (because $1 \text{ yd.}^2 = 3 \text{ ft.} \times 3 \text{ ft.} = 9 \text{ ft.}^2$): $288 \text{ ft.}^2 \div 9 \text{ ft.}^2/\text{yd.}^2 = 32 \text{ yd.}^2$. Multiply the number of square yards by the cost of protection per square yard, \$0.65, to get the correct answer: $32 \text{ yd.}^2 \times \$0.65/\text{yd.}^2 = \$20.80$
8. **C.** Let x equal the number of cards printed and sold each month. Each card costs \$0.18 to print and sells for \$0.30. Therefore, the cost is equal to $6,000 + 0.18x$, and revenue is equal to $0.30x$. You're looking for the point where revenue is greater than the cost (revenue > cost). The inequality is $0.30x > 6,000 + 0.18x$.
Now solve for x . Subtract $0.18x$ from both sides of the inequality and then divide both sides by 0.12:

$$0.12x > 6,000$$

$$x > 50,000$$

The printing plant would have to print and sell at least 50,000 cards per month to make a profit.

9. **C.** Joe gets a 7% raise. To calculate the new wage, start off by multiplying $\$8.15 \times 0.07 = \0.57 . Then add that number (the amount of Joe's raise) to his original hourly wage. Joe's new hourly wage is $\$8.15 + \$0.57 = \$8.72$.
10. **C.** To find distance, you multiply speed by time. First find how far Alice travels before Dave catches up with her. By the time Dave leaves, Alice has already been traveling for half an hour. Three hours later, she would've been traveling for $3\frac{1}{2}$ hours at 45 mph, or 157.5 miles: $3.5 \text{ hr.} \times 45 \text{ mph} = 157.5 \text{ mi.}$ Dave has three hours to cover this distance. Now find his speed. To travel 157.5 miles in 3 hours, Dave would have to travel at 52.5 mph: $157.5 \text{ mi.} \div 3 \text{ hr.} = 52.5 \text{ mph}$.

11. **D.** To find the amount of pie purchased (which, by the way, does not give you the final answer), you have to add the fractions. But first the fractions need to have a common denominator. The denominators (4, 3, and 6), all divide evenly into 12, so use 12 as the common denominator.

To convert the fractions to the least common denominator of 12, do the following:

$$\frac{1}{4} \times \frac{3}{3} = \frac{3}{12}$$

$$\frac{1}{3} \times \frac{4}{4} = \frac{4}{12}$$

$$\frac{1}{6} \times \frac{2}{2} = \frac{6}{12}$$

Now you can add the fractions together:

$$\frac{3}{12} + \frac{4}{12} + \frac{2}{12} = \frac{3+4+2}{12} = \frac{9}{12}$$

Nine-twelfths of 20 pies is the same thing as $\frac{3}{4}$, or 75%, of the 20 pies. That equals 15 pies. But that's *not* what the question asks. One more step: Subtract the pies sold (15) from the original 20, leaving 5 pies, which makes Choice (D) correct.

12. **A.** Subtract the sale price from the regular price to find how much she saves on each case: $\$24.00 - \$22.50 = \$1.50$. Multiply the answer by the total number of cases to get your final answer: $\$1.50 \times 5 = \7.50 .
13. **C.** Divide 30 by 8 to determine how long the security guard takes to walk one city block: $30 \div 8 = 3.75$ minutes. Then multiply 3.75 by 6, the number of blocks it takes to complete the circuit. The answer is 22.50 minutes.
14. **B.** Let x equal the original number of how much Grand Island would grow. An additional $\frac{1}{5}$ would make the population growth $\frac{6}{5}$, or 120%, of x . You can express the equation as $1.2x = 600,000$. To solve for x , divide both sides of the equation by 1.2, which gives you $x = 500,000$.
15. **D.** Divide the number of questions she has to get right (40) by the total number of questions (60) to reach $66\frac{2}{3}\%$.
16. **C.** The interest formula says that interest equals principal times rate times time, or $I = Prt$. To determine the amount of interest earned, multiply the principal ($\$3,000$) by the interest rate (6%) and the number of years interest accrues (1 year): $\$3,000 \times 0.06 \times 1 = \180 . Add the interest earned to the principal to show how much total money the teacher would have: $\$180 + \$3,000 = \$3,180$.
17. **B.** Recognize that if the track is a quarter mile long, then 1 mile equals four laps. Therefore, multiply 4 times 3.5 miles; the answer is 14 laps.
18. **A.** One kilometer is approximately $\frac{5}{8}$ of 1 mile, so you can multiply $75 \times \frac{5}{8}$: $75 \times 5 = 375$, and $375 \div 8$ equals about 46.8. Therefore, Karl was traveling at 47 miles per hour.
19. **A.** You need to add the carpenter's base pay and overtime pay to find his total pay for the week. First find his base pay per week: $\$12.30/\text{hr.} \times 40 \text{ hr.} = \492 . Then find his overtime rate per hour, which is $1\frac{1}{2}$ times his base pay: $\$12.30/\text{hr.} \times 1.5 = \18.45 . Multiply this rate by the number of hours of overtime to find his overtime pay: $\$18.45/\text{hr.} \times 6 \text{ hr.} = \110.70 . Finally, add his base pay and overtime pay to find his total pay for the week: $\$492.00 + \$110.70 = \$602.70$.
20. **A.** The office has 1,260 square feet of space (multiply 42 square feet by 30 employees). With 35 employees, each employee will have 36 square feet of work space ($1,260 \div 35$), which is 6 square feet less than originally.

21. **B.** The total cost is the down payment plus 5 years' worth of monthly payments. Five years contain 60 months, so multiply $\$450 \text{ (monthly payment)} \times 60 = \$27,000$ (total payments). Then add $\$27,000$ (total payments) + $\$2,000$ (down payment) = $\$29,000$ (total cost).
22. **D.** Add the three monthly amounts to determine the total amount Darla spent on groceries: $\$120.37 + \$108.45 + \$114.86 = \343.68 . Divide the total by 3 to determine the average monthly cost: $\$114.56$.
23. **C.** Distance equals speed times time, so divide the total distance by Keith's average speed to find how long the trip took: $1,650 \text{ mi.} \div 50 \text{ mph} = 33 \text{ hr.}$
24. **B.** Choice (A) doesn't provide enough paint ($2 \times 25 \text{ gal.} = 50 \text{ gal.}$), so it's wrong. Now determine the cost of each of the other options:
- Choice (B): $11 \times \$108 = \$1,188$
- Choice (C): $6 \times \$215 = \$1,290$
- Choice (D): $55 \times \$23 = \$1,265$

The lowest price is \$1,188, Choice (B).

25. **B.** First find how many ounces of rations each truck can hold. One ton is 2,000 pounds, so one truck can carry three times that, or 6,000 pounds. There are 16 ounces in a pound, so one truck can carry 96,000 ounces: $6,000 \text{ lbs.} \times 16 \text{ oz.} = 96,000 \text{ oz.}$
Then figure out how many daily rations are in a truckload. The total daily ration for each resident is 12 ounces + 18 ounces + 18 ounces, or 48 ounces. You can express the number of daily rations supplied as $96,000 \text{ oz.} \div 48 \text{ oz./daily ration} = 2,000$ daily rations. These rations need to last 10 days. Dividing 2,000 by 10 days results in 200 residents who can be fed by one truck during this 10-day period.
26. **D.** The train headed for Wichita traveled $55 \text{ miles/hour} \times 3 \text{ hours} = 165$ total miles. The train headed for Des Moines traveled $70 \text{ miles/hour} \times 3 \text{ hours} = 210$ total miles. Adding the distances together gives you the number of miles apart the two trains are after three hours: $210 + 165 = 375$. **Another option:** You can add the two rates of speed ($55 + 70$) and multiply the sum by 3 hours ($125 \times 3 \text{ hours} = 375$).
27. **A.** Convert the mixed number to inches: 3 feet, 8 inches equals 44 inches ($12 \text{ in./ft.} \times 3 \text{ ft.} = 36 \text{ in.}$, and $36 \text{ in.} + 8 \text{ in.} = 44 \text{ in.}$). Forty-four inches (length each section needs to be) $\times 4$ (number of sections needed) = 176 inches (total molding needed). To find the amount of molding needed in feet, convert 176 inches into feet by dividing 176 inches by 12 inches. You get $14\frac{2}{3}$ feet, so the shortest board length necessary is 15 feet.
28. **A.** One turkey breast costs \$8.50 minus 10% of \$8.50 (which is \$0.85), or $\$8.50 - \$0.85 = \$7.65$. The other turkey breast is full price, so add the two costs: $\$7.65 + \$8.50 = \$16.15$.
29. **C.** Don't let the number of miles traveled confuse you. You don't use them to solve the problem. Finding $\frac{2}{5}$ of a 40-hour work week is the same thing as multiplying 40 times 2, which is 80, and then dividing 80 by 5, which equals 16 hours the recruiter travels weekly.
30. **B.** Your first step is to determine the number of miles traveled. Multiply the rate of travel by the time: $48 \times 7 = 336 \text{ mi.}$ The amount of gas used is the total miles driven divided by the number of miles per gallon: $336 \div 21 = 16 \text{ gal. used.}$ At the price of \$2.82 per gallon, you spent \$45.12 for gas: $\$2.82 \times 16 = \45.12 .

Subtest 3: Word Knowledge Answers

The Word Knowledge subtest is nothing more than a vocabulary test. However, it's very important because it's another one of the four subtests used to make up your AFQT score. If you find you need to improve your vocabulary, see Chapter 4.



A couple of other great study references are *Vocabulary For Dummies* by Laurie E. Rozakis (Wiley) and *SAT Vocabulary For Dummies* by Suzee Vlk (Wiley). Additionally, see Chapter 6 for more practice questions.

- | | | | | | | |
|------|-------|-------|-------|-------|-------|-------|
| 1. A | 6. C | 11. B | 16. A | 21. D | 26. D | 31. C |
| 2. A | 7. A | 12. D | 17. A | 22. A | 27. B | 32. A |
| 3. B | 8. D | 13. B | 18. C | 23. C | 28. B | 33. C |
| 4. C | 9. D | 14. B | 19. A | 24. D | 29. C | 34. D |
| 5. C | 10. B | 15. B | 20. D | 25. B | 30. B | 35. A |

Subtest 4: Paragraph Comprehension Answers

Like Word Knowledge, your Paragraph Comprehension score goes toward your AFQT score, so pay special attention if you've missed more than a couple of these answers — you need some study time (see Chapter 5). Remember that rereading the paragraph several times to make sure you have the right answer is perfectly fine. You can find additional practice questions in Chapter 6.

1. C. Effective appointment management eliminates the waste of your time, as the last sentence of the passage explains.
2. D. The passage gives the numbers of senators and representatives, so Choice (A) is incorrect. The passage states that each state's population determines the number of representatives a state has, so Choice (B) is incorrect. As the passage states, each state has at least one representative, so Choice (C) is incorrect.
3. A. Many languages are excluded from the Indo-European language group, so Choice (B) is incorrect. Indians, Iranians, Asians, and Afghans aren't Europeans, so Choice (C) is incorrect. The passage gives no evidence to support Choice (D), which isn't true.
4. D. Privatized functions operate independently of the government, making Choices (A) and (B) incorrect. The passage states that privatized functions may sell goods and services to other customers as well as the government, so Choice (C) is also incorrect. Choice (D) is the correct answer, because privatized functions do perform essential services to government agencies.
5. C. Choice (A) — “Lead by Example” — is a good philosophy but isn't pertinent to the main point of the passage. Choices (B) and (D) are subpoints, which support the main point of the passage, which is how to lead a successful conference (C).
6. A. You can assume that causing rain or snow would end a drought, Choice (A). Nothing in the passage has to do with expense, so Choice (B) is incorrect. The passage says nothing about how frequently the process is used, so Choice (C) is incorrect. The passage specifies that dry ice (solid carbon dioxide) is used; regular ice (solid water) is a different substance, so Choice (D) is wrong.
7. C. Choices (A) and (B) may be true in certain situations, but they're not the point of this particular paragraph. The passage doesn't say anything about working to improve writing skills being a waste of time, so Choice (D) is incorrect. The main point of the paragraph is that writing may not be the most efficient way of communicating, depending on the situation.
8. B. Products with transistors weren't widely sold before 1954 because of the expense and difficulty of production, not because markets didn't exist, so Choice (A) is incorrect. Choice (C) has the right date, but the passage doesn't say who invented the transistor,

so it's wrong as well. Choice (D) is wrong because the passage states that the problem of transistors' being expensive to produce was solved by 1954. The last sentence notes that the first transistor radio went on the market after cost and production problems were overcome, so (B) is the right answer.

9. **B.** The words *London* and *Englishman* make it clear that the author is speaking of his travels in England, which is part of Great Britain.
10. **A.** The author makes no reference to parents in the passage, so Choice (B) is incorrect. The author doesn't imply anything about all these interests requiring equal time, so Choice (C) is incorrect. The passage is about children under 18; you can't draw a conclusion about what the author thinks people over 18 should do, so Choice (D) is incorrect.
11. **C.** The passage doesn't say anything about mock job interviews being frightening, so Choice (A) is wrong. The passage says that mock job interviews should be available to all students, so Choice (B) is wrong. The passage says that schools, not students, should organize mock interviews, so Choice (D) is incorrect.
12. **A.** Choices (B), (C), and (D) are the opposite of what the paragraph states and implies.
13. **B.** Nothing in the paragraph supports Choice (A), which is incorrect. When an amendment is passed, it becomes part of the Constitution, so Choice (C) is incorrect. The passage doesn't support Choice (D), because the passage doesn't mention anything related to lottery tickets. The passage defines *due process* as "the guarantee of fairness in the administration of justice," so (B) is correct.
14. **C.** Because the 14th Amendment guarantees due process in states' laws, the 5th Amendment must guarantee due process only in federal law, which makes Choice (C) right. Nothing in the passage implies that the 5th Amendment is about taxes, so Choice (A) is wrong. Because the passage states that the 14th Amendment had to be enacted to require states to abide by due process, Choice (B) is incorrect. Choice (D) is neither stated nor implied in the passage.
15. **A.** Because the Supreme Court struck down many state laws after the 14th Amendment was enacted, it's probably true that these laws would still exist if there'd been no 14th Amendment. The passage doesn't support Choices (B), (C), or (D).

Subtest 5: Mathematics Knowledge Answers

This subtest is also used to calculate your AFQT score, so it's important. If you miss more than four or five, consider brushing up on your basic math skills. Chapter 8 can help with this.



The following books may also be of some help: *Algebra For Dummies* and *Algebra II For Dummies* by Mary Jane Sterling, *Geometry For Dummies* and *Calculus For Dummies* by Mark Ryan, and *SAT II Math For Dummies* by Scott Hatch (all books published by Wiley). Chapter 9 also has some additional practice questions.

1. **A.** Substitute 8 for x in the equation and then solve for y :

$$\begin{aligned}y &= (x^2 \div 4) - 2 \\&= (8^2 \div 4) - 2 \\&= (64 \div 4) - 2 \\&= 16 - 2 \\&= 14\end{aligned}$$

2. **A.** The cube of 5 is 5^3 , which is $5 \times 5 \times 5 = 125$.

3. C. Because of the order of operations, you need to find 3^3 first and then multiply by 2.5:

$$\begin{aligned} & 2.5 \times 3^3 \\ & = 2.5(3 \times 3 \times 3) \\ & = 2.5 \times 27 \\ & = 67.5 \end{aligned}$$

4. D. Because $2^4 = 16$, the fourth root of 16 is 2.

5. A. To get the equation of the line, you need to know the line's slope and y -intercept. The slope of the line is equal to the change in y values divided by the change in x values. The change in y values is $3 - (-1) = 4$. The change in x values is $2 - 0 = 2$. Thus, the slope is $\frac{4}{2} = 2$. The line passes through the point $(0, 1)$, so to find the intercept, substitute 0 for x and -1 for y in the equation $y = 2x + b$:

$$\begin{aligned} -1 &= 2(0) + b \\ b &= -1 \end{aligned}$$

Therefore, $b = -1$, so the full equation is $y = 2x - 1$.

6. C. Do what's in parentheses first. You need consistent units of measurement, so convert 12 yards to feet; then add 14 feet:

$$\begin{aligned} (12 \text{ yd.} \times 3 \text{ ft./yd.}) &+ 14 \text{ ft.} \\ &= 36 \text{ feet} + 14 \text{ feet} \\ &= 50 \text{ feet} \end{aligned}$$

The original problem asks for $(12 \text{ yards} + 14 \text{ feet}) \div 5$, so divide by 5 as instructed: $50 \text{ feet} \div 5 = 10 \text{ feet}$.

7. D. If two powers have the same base, you multiply them by keeping the base the same and adding the powers together: $x^3 \cdot x^4 = x^{3+4} = x^7$.

8. D. To find $(x + 4)(x + 2)$, you need to multiply every term in the first set of parentheses by every term in the second set and then add the results. The acronym FOIL (First, Outside, Inside, Last) can help you keep track of which terms you're multiplying:

- ✓ **First:** Multiply the first variable in the first set of parentheses by the first variable in the second set of parentheses: $x(x) = x^2$.
- ✓ **Outside:** Next, multiply the first variable in the first set of parentheses by the second number in the second set of parentheses: $x(2) = 2x$. So far, the results are $x^2 + 2x$.
- ✓ **Inside:** Now multiply the second number in the first set of parentheses by the first variable in the second set of parentheses: $4(x) = 4x$.
- ✓ **Last:** Next, multiply the second number in the first set of parentheses by the second number in the second set of parentheses: $4(2) = 8$.

The solution is $x^2 + 2x + 4x + 8$. Combining the like terms results in $x^2 + 6x + 8$.

9. C. You need to do powers (exponents) first, so find 10^3 and then multiply by 1.5:

$$\begin{aligned} & 1.5 \times 10^3 \\ & = 1.5 \times (10 \times 10 \times 10) \\ & = 1.5 \times 1,000 \\ & = 1,500 \end{aligned}$$

10. **B.** A *prime number* is a number that can be divided evenly by itself or by 1 but not by any other number. Choices (A), (C), and (D) can all be divided evenly by other numbers.
11. **B.** The *mode* of a series of numbers is the number that appears in the series the most frequently. In this case, it's 8.
12. **D.** Substitute 4 for all a 's in the problem and then solve, doing the powers first:

$$\begin{aligned} 4^3 \div 4 \\ = (4 \times 4 \times 4) \div 4 \\ = 64 \div 4 \\ = 16 \end{aligned}$$

13. **C.** The factorial (!) of a number is the number multiplied by the next-smallest whole number, then by the next smallest whole number, and so on down to 1:

$$5! = 5 \times 4 \times 3 \times 2 \times 1 = 120$$

14. **B.** Do what's in parentheses first:

$$(900 \times 2) \div 6 = 1,800 \div 6 = 300$$

15. **A.** Substitute 2 for all x 's in the problem and then solve, starting with the powers:

$$2^2(2) = 4(2) = 8$$

16. **D.** The problem asks you to solve $(5 + 1)(6 \div 3)(8 - 5) = (3 + 3)x$ for x . Solve the first half of the equation, finding the values in parentheses first:

$$(6)(2)(3) = 36$$

Therefore, the whole equation becomes $36 = (3 + 3)x$, which turns into $36 = 6x$. Isolate x :

$$36 \div 6 = 6x \div 6$$

$$6 = x$$

To check your answer, substitute 6 for x .

17. **A.** The square root of 49 is 7; the square root of 64 is 8. And $7 \times 8 = 56$.
18. **D.** Find a common denominator for the fractions. In this case, 80 works for all the fractions. Convert all the fractions using the following method:

$$\frac{2}{5} \times \frac{16}{16} = \frac{32}{80}$$

$$\frac{3}{8} \times \frac{10}{10} = \frac{30}{80}$$

$$\frac{7}{10} \times \frac{8}{8} = \frac{56}{80}$$

$$\frac{13}{16} \times \frac{5}{5} = \frac{65}{80}$$

Comparing the fractions, you can see that $\frac{65}{80}$ (or $\frac{13}{16}$) is the largest fraction.

19. **B.** Solve as you would solve for any unknown:

$$2 + x \geq 4$$

$$2 + x - 2 \geq 4 - 2$$

Therefore, $x \geq 2$. To check your answer, substitute 2 for x : $2 + 2 \geq 4$. That's true, so the answer is correct.

20. **C.** Circumference equals $\pi \times$ diameter, and diameter is equal to two times the radius (or mathematically, $C = \pi d$ and $d = 2r$). For this problem, $C = \pi \times 24$. If you round π to 3.14, the answer is about 75.36, or about 75 feet.
21. **A.** Volume equals length \times width \times height ($V = lwh$), so plug in the numbers and solve: $16 \times 8 \times 18 = 2,304$ in.³
22. **C.** In an equilateral triangle, all sides are equal and all angles are equal.
23. **A.** All quadrilaterals (four-sided figures) have angles that total 360 degrees.
24. **B.** If the sum of two angles equals 90 degrees, they're called *complementary angles*.
25. **A.** $24\% = \frac{24}{100}$. You further reduce this fraction to $\frac{6}{25}$ by dividing the numerator and denominator by 4.

Subtest 6: Electronics Information Answers

The Electronics Information subtest is important only if you plan on a career that requires a solid score in this area (check Appendix A to see whether the jobs you're interested in require a score in this subtest). Otherwise, spend your time studying for the math- and word-related ASVAB subtests. If you do need to score big on this test and you missed more than five answers, start brushing up. Start by reviewing the corresponding chapter in this book (Chapter 13).



If you need even more study, check out *Electronics For Dummies* by Gordon McComb (Wiley) or consider enrolling in a quick course at a community college. You can also find additional practice questions in Chapter 15.

1. **A.** Ohm's law states that Voltage (E) = Current (I) \times Resistance (R). All other answer are incorrect expressions of this law.
2. **A.** You read a resistor's color bands from left to right. The first band denotes the first digit, the second band denotes the second digit, and the third band denotes the subsequent number of zeros. In this example, brown is one, black is zero, and red means there are two additional zeros.
3. **B.** Heaters, pumps, stairs, diving boards, railings, and rebar, among other things, must be bonded together by a minimum #8 wire for safety purposes.
4. **D.** *Voltage* is commonly used as a short name for electrical potential difference, and it is measured in volts.
5. **A.** SIM stands for *Subscriber Identity Module*. The card contains information such as your phone number, your billing information, and your address book. The card makes it easier to switch from one cell phone to another.
6. **A.** A resistor is so named because it resists (or inhibits) the flow of current.
7. **C.** A diode has two terminals, the anode and the cathode, which is why it's called a *diode*. It restricts current flow to only one direction.
8. **C.** Radar can operate as high as 100,000 MHz (megahertz).
9. **B.** *Current* is the flow of charged particles. The difference between *alternating current* (AC) and *direct current* (DC) is that the electrons in an AC circuit regularly reverse their direction. In a DC circuit, electrons always flow in the same direction.
10. **C.** Changing AC to DC is a process called *rectification*.
11. **C.** A British thermal unit (BTU) is a measure of heat energy.

12. **D.** *Current* is the presence of electron flow.
13. **B.** *Transducers*, which transform energy, can be switches, strain gauges, temperature sensors, or inductive switches.
14. **D.** *Active elements* are electronic devices that can create energy (such as voltage supplies and current supplies). *Passive elements* are electronic devices that cannot create energy.
15. **A.** Power = Current × Voltage or, written another way, Current = Power ÷ Voltage. Plug in the numbers and do the math: 60 watts ÷ 120 volts = 0.5 amperes.
16. **C.** The larger the number, the smaller the diameter of the wire.
17. **C.** Because fuses are designed to prevent current overload at a specific level, a fuse with a high rating may allow a higher current to flow through a circuit not designed to work at that higher current, possibly causing damage to the circuit.
18. **A.** Neutral wire is always whitish or natural colored.
19. **D.** Electrical power is measured in watts, so you use a wattmeter. An ammeter measures amps (current). An ohmmeter measures ohms (resistance). A voltmeter measures volts (voltage).
20. **B.** The bulb will burn dimmer because its full potential isn't used; it'll last longer for the same reason.

Subtest 7: Auto & Shop Information Answers

The Auto & Shop Information subtest is fairly straightforward. You either know the information or you don't. Not knowing the info may not matter to you as long as the career you want doesn't require a subtest score in this area (check the Appendix to see whether the jobs you're interested in require a score in this subtest). But if you do need to do well on this subtest and you've missed more than five answers, review the material in Chapter 11.



Reviewing *Auto Repair For Dummies* by Deanna Sclar (Wiley) may also help you score better on this subtest. *Home Improvement All-in-One For Dummies* by Roy Barnhart, James Carey, Morris Carey, Gene Hamilton, Katie Hamilton, Donald R. Prestly, and Jeff Strong (Wiley) can help you get a better handle on basic tools and their uses. You may even want to take a class at a nearby community college or at least hang out at the garage and help some mechanics for a couple of weeks. See Chapter 15 for some more practice questions.

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|-------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 1. D | 4. A | 7. D | 10. B | 13. C | 16. C | 19. C | 22. B | 25. A |
| 2. B | 5. A | 8. C | 11. C | 14. B | 17. B | 20. C | 23. A | |
| 3. B | 6. A | 9. D | 12. A | 15. B | 18. B | 21. A | 24. D | |

Subtest 8: Mechanical Comprehension Answers

The Mechanical Comprehension subtest is important only if you want to pursue a military career that requires a good score on this subtest (check Appendix A to see whether the jobs you're interested in require a score in this subtest). Otherwise, spend your time studying more important areas of the ASVAB. If you're considering a military job that requires a high mechanical aptitude and you missed more than four or five questions on this subtest, give Chapter 12 another once over.

1. **A.** An induction clutch is a magnetic clutch. When a conductor (wire) is wrapped around a core and electricity is passed through the wire, it sets up a magnetic field. The same wire also acts as an inductor, which produces inductance, during AC current flow. It's similar to resistance in a resistor in that it "resists" current flow, but the value of inductance is based on the value of the inductor (written as L) and the frequency of the AC current. Therefore, an induction clutch uses magnetism to operate.
2. **B.** You can calculate mechanical advantage as Length of Effort Arm ÷ Length of Resistance Arm. Simply plug in the numbers: $MA = 8 \div 2 = 4$.
3. **D.** The box with the largest area on the bottom will have the shortest sides. If Length × Width × Height = Volume and all the boxes have equal volume, then the sides must be shortest on the box with the largest area on the bottom. Calculate the area of each box bottom:

No. 1 = 20 square inches

No. 2 = 35 square inches

No. 3 = 48 square inches

No. 4 = 27 square inches

No. 3, which has the largest area, will have the shortest sides.

4. **C.** Anvil B's landing on the seesaw will propel Anvil A into the air.
5. **A.** Pressure equals force divided by area in square inches ($P = F \div A$). You can also state this formula as $F = A \times P$. Substitute the known quantities: $F = 15 \times 24 = 360$ pounds.
6. **C. Recoil** occurs when an object producing a force is kicked back.
7. **A.** To determine the answer, multiply the number of teeth Gear 1 has (D) and the number of revolutions it makes (R). Divide that number by the number of teeth Gear 2 has (d) to determine the number of revolutions Gear 2 makes (r). Because the gears are proportional, this formula shows you the ratio of teeth to revolutions.

$$r = \frac{DR}{d}$$

$$r = \frac{25 \times 10}{15}$$

$$r = \frac{250}{15} = \frac{50}{3} = 16\frac{2}{3}$$

8. **B.** You can determine the pressure of all that water by multiplying the volume of the aquarium by the weight of the water. Volume = lwh . The bottom of the tank is 18 feet long by 12 feet wide by 10 feet high for a total volume of 2,160 cubic feet: $18 \times 12 \times 10 = 2,160 \text{ ft.}^3$ A cubic foot of water weighs approximately 62.5 pounds, so multiply the volume of water by 62.5: $2,160 \times 62.5 = 135,000$.

That gives an approximate pressure on the bottom of the tank of about 135,000 pounds over the entire surface area. The surface area of the bottom of the tank is length × width. Convert feet to inches and then find the area: $A = (18 \text{ ft.} \times 12 \text{ in./ft.}) \times (12 \text{ ft.} \times 12 \text{ in./ft.}) = 216 \text{ in.} \times 144 \text{ in.} = 31,104 \text{ in.}^2$.

Dividing the pressure of 135,000 by the number of square inches of surface area gives an approximate psi of 4.

9. **D.** Machine springs are usually made of steel, although sometimes they're made of brass or other metal alloys.
10. **B.** Clutches connect and disconnect parts, so they're a type of coupling.

11. D. When the high point of the cam connects with the lever arm, the lever arm will touch the contact point. Two high points on the cam mean the lever arm will touch the contact point twice with each revolution of the cam.
12. C. A *single block-and-fall* is a way to get mechanical advantage by threading a rope through a pulley or stationary point, the load being attached to the end of the rope, and you pulling on the other end of the rope, hoisting the load. The device is also called a *runner*.
13. C. If the fulcrum is moved closer to the anvil, the length of the effort arm of the lever will be increased, making the anvil easier to raise, but the height to which the anvil can be raised will be reduced.
14. A. Because this block-and-tackle arrangement merely changes the direction of the pull, it has a mechanical advantage of only 2.
15. C. The larger cog (Cog A) covers a greater linear distance in a given period of time, so Cog A reaches the top first.
16. A. The key will feel coldest because metal is a better conductor than the other materials.
17. D. All but Valve 4 should be open. Opening Valves 1 and 2 allows water to enter the tank. Opening Valves 3 and 5 prevents water from filling the tank entirely. Opening Valve 4 allows water to leave the tank.
18. A. Gears with their teeth together in mesh turn in opposite directions. Gear A turns Gear B in the opposite direction (right), and Gear B turns Gear C in the opposite direction (left).
19. A. Gears with their teeth together in mesh turn in opposite directions. Gear 1 turns clockwise. Gear 2, in mesh with Gear 1, turns counterclockwise. Gear 3, in mesh with Gear 2, turns clockwise. Gear 4, in mesh with Gear 3, turns counterclockwise. Gear 5, in mesh with Gear 2, turns clockwise.
20. C. The gauge shows a reading of 21.
21. D. The formula for determining power is Power = Work ÷ Time.
22. C. Silver is the best conductor, so it will become hotter faster than the other objects because heat transfers faster into materials with greater conductivity than with those with lower conductivity.
23. A. Stationary pulleys give no mechanical advantage, so effort equals the weight of the crate, or 50 pounds.
24. C. At the height of the arc, the ball has no upward momentum, so it goes the slowest at that point.
25. A. The brace on Angle A covers more area of the angle, so it's more solidly braced.

Subtest 9: Assembling Objects Answers

If you plan on enlisting in the Navy, check Appendix A to see whether the jobs you're interested in require a score in this subtest. For more information about the Assembling Objects subtest, see Chapter 14. For additional practice questions, see Chapter 15.

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|------|------|------|-------|-------|-------|-------|-------|-------|
| 1. C | 4. D | 7. C | 10. B | 13. D | 16. A | 19. C | 22. D | 25. C |
| 2. A | 5. A | 8. D | 11. A | 14. C | 17. B | 20. A | 23. B | |
| 3. D | 6. A | 9. B | 12. D | 15. B | 18. B | 21. B | 24. C | |