SSAT 2013

SECTION 1
WRITING THE ESSAY

Time: 25 minutes

Directions: Using two sheets of lined theme paper, plan and write an essay on the topic assigned below DO NOT WRITE ON ANOTHER TOPIC. AN ESSAY ON ANOTHER TOPIC IS NOT ACCEPTABLE.

Topic: Why people visit museums?

Directions: Many people visit museums when they travel to new places. Why do you think people visit museums? Use specific reasons and examples to support your answer.

GO ON TO THE NEXT SECTION

SECTION 2

VERBAL REASONING

Time: 20 minutes

60 Questions

Directions: This section is divided into two parts that contain different types of questions. As soon as you have completed Part One, answer the questions in Part Two. You may write in your test booklet. For each answer you select, fill in the corresponding circle on your answer document.

Part One

Directions: Each question in Part One is made up of a word in capital letters followed by four choices. Choose the one word that is most nearly the same in meaning as the word in capital letters.

Example	**Answer**
SWIFT: (A) clean (B) fancy (C) fast (D) quiet	Ⓐ Ⓑ ● Ⓓ

1. PERILOUS:
   (A) estranged
   (B) irregular
   (C) hazardous
   (D) careless
   (E) conniving

2. STATIONARY:
   (A) mobile
   (B) immobile
   (C) position
   (D) paper
   (E) moving

3. TRANSCRIBE:
   (A) circulate
   (B) author
   (C) request
   (D) copy
   (E) illustrate

4. PROFICIENT:
   (A) adept
   (B) prolific
   (C) professional
   (D) well-known
   (E) practice

5. DECEIVE:
   (A) mislead
   (B) pretend
   (C) examine
   (D) rearrange
   (E) stun

6. AGILE:
   (A) rested
   (B) nimble
   (C) strong
   (D) similar
   (E) anxious

7. DURATION:
   (A) former
   (B) wait
   (C) area
   (D) temptation
   (E) term

8. AMBIGUOUS:
   (A) adhere
   (B) aspire
   (C) unclear
   (D) certain
   (E) afflict

9. PREROGATIVE:
   (A) prerequisite
   (B) command
   (C) conviction
   (D) haggard
   (E) choice

10. INTRIGUING:
    (A) fascinating
    (B) business
    (C) boorish
    (D) furtive
    (E) mystery

11. AGENDA:
    (A) combination
    (B) receipt
    (C) schedule
    (D) agent
    (E) correspondence

12. CREDIBLE:
    (A) fortunate
    (B) believable
    (C) untrue
    (D) correct
    (E) suitable

13. PLACID:
    (A) public
    (B) explosive
    (C) quiet
    (D) crystalline
    (E) lenient

14. INTERVENE:
    (A) interfere
    (B) solve
    (C) intermediary
    (D) invert
    (E) induce

15. MUNDANE:
    (A) immense
    (B) common
    (C) extraordinary
    (D) weekly
    (E) stupid

16. DEHYDRATED:
    (A) waterless
    (B) worthless
    (C) deflated
    (D) pointless
    (E) airless

17. PREVALENT:
    (A) prior
    (B) preeminent
    (C) predominant
    (D) predictive
    (E) predating

18. SUCCINCT:
    (A) alert
    (B) despicable
    (C) superfluous
    (D) fearful
    (E) concise

19. NOCTURNAL:
    (A) by day
    (B) alternating
    (C) frequent
    (D) revolving
    (E) by night

20. EQUITABLE:
    (A) fair
    (B) unreasonable
    (C) biased
    (D) prejudiced
    (E) preferential

21. SATURATE:
   (A) measure
   (B) soak
   (C) boil
   (D) pour
   (E) anger

22. GENTEEL:
   (A) loud
   (B) harmless
   (C) refined
   (D) stupid
   (E) timid

23. WINSOME:
   (A) critical
   (B) small
   (C) charming
   (D) shy
   (E) athletic

24. REPROACH:
   (A) complain
   (B) insist
   (C) blame
   (D) whine
   (E) retreat

25. DEMONSTRATE:
   (A) imply
   (B) renew
   (C) show
   (D) require
   (E) object

26. CAMOUFLAGE:
   (A) helmet
   (B) disguise
   (C) outlook
   (D) outfit
   (E) jewelry

27. AGHAST:
   (A) irritated
   (B) shocked
   (C) swollen
   (D) rude
   (E) nasty

28. RECOLLECT:
   (A) remember
   (B) invent
   (C) remove
   (D) discover
   (E) reject

29. INITIATE:
   (A) start
   (B) gather
   (C) celebrate
   (D) try
   (E) command

30. SUFFOCATE:
   (A) surround completely
   (B) give instruction
   (C) deprive of air
   (D) pull out
   (E) make willing

Part Two

Directions: Each question below is made up of a sentence with one or two blanks. One blank indicates that one word is missing. Two blanks indicate that two words are missing. Each sentence is followed by four choices. Select the one word or pair of words that will best complete the meaning of the sentence as a whole.

Example	Answer
Ann carried the box carefully so that she would not _____ the pretty glasses.	●Ⓑ©Ⓓ

(A) break

(B) fix

(C) open

(D) stop

When our boat first crashed into the rocks we
were _____, but we soon felt _____ when
we realized that nobody was hurt.

●(B)(C)(D)

(A) afraid; relieved

(B) happy; confused

(C) sleepy; sad

(D) sorry; angry

31. Fossil is to petrified as _____.

   (A) fog is to dense

   (B) solution is to dissolved

   (C) gully is to craggy

   (D) wood is to hard

   (E) snowflake is wet

32. Sphere is to round as _____.

   (A) honeycomb is to hexagonal

   (B) rectangle is to shape

   (C) triangle is to line

   (D) protractor is to angle

   (E) ball is to rubber

33. Careful is to picky as _____.

   (A) concerned is to grateful

   (B) tired is to exhausted

   (C) forgiving is to peaceful

   (D) fancy is to short

   (E) alert is to asleep

34. Cave is to rock as apse is to _____.

   (A) plateau

   (B) patio

   (C) cliff

   (D) stage

   (E) church

35. Lemonade is to lemon as _____.

   (A) berry is to stain

   (B) glass is to ivory

   (C) juice is to cherry

   (D) stone is to mud

   (E) paper is to wood

36. Frog is to amphibian as whale is to _____.

   (A) branch

   (B) fur

   (C) mammal

   (D) toad

   (E) sea

37. Dentist is to drill as _____.

   (A) pilot is to wing

   (B) manager is to computer

   (C) surgeon is to scalpel

   (D) doctor is to stretcher

   (E) farmer is to grain

38. Mosaic is to tile as _____.

   (A) tapestry is to thread

   (B) billboard is to chart

   (C) poster is to frame

   (D) advertisement is to magazine

   (E) sweater is to wool

39. Pebble is to rock as drop is to _____.

   (A) sand

   (B) grain

   (C) fountain

   (D) boulder

   (E) liquid

40. Levee is to river as _____.

   (A) train is to track

   (B) path is to forest

   (C) shoulder is to road

(D) sail is to boat

(E) bridge is to truck

41. Injury is to heal as malfunction is to
_____.

(A) misinterpret

(B) disassemble

(C) throw

(D) repair

(E) bandage

42. Jog is to sprint as trot is to _____.

(A) soar

(B) roam

(C) saunter

(D) ramble

(E) gallop

43. Bone is to body as _____.

(A) knob is to door

(B) driver is to car

(C) beam is to building

(D) floor is to house

(E) motor is to boat

44. Amorphous is to shape as odorless is
to _____.

(A) weight

(B) worth

(C) scent

(D) anger

(E) appearance

45. Vain is to humble as _____.

(A) cantankerous is to thoughtless

(B) authoritative is to discursive

(C) extroverted is to shy

(D) judicious is to lenient

(E) anxious is to boisterous

46. Test is to study as _____.

(A) play is to rehearse

(B) office is to employ

(C) train is to practice

(D) income is to work

(E) job is to apply

47. Smile is to frown as cheer is to _____.

(A) extricate

(B) laugh

(C) wince

(D) leap

(E) jeer

48. Banana is to peel as _____.

(A) corn is to husk

(B) bread is to slice

(C) carrot is to uproot

(D) apple is to core

(E) egg is to crack

49. Touch is to tactile as _____.

(A) eye is to visual

(B) taste is to sense

(C) smell is to olfactory

(D) mouth is to oral

(E) sound is to noise

50. Articulateness is to speech as _____.

(A) ballet is to form

(B) legibility is to handwriting

(C) painting is to palette

(D) music is to note

(E) etiquette is to society

51. Poltroon is to pusillanimous as _____.

(A) progressive is to hidebound

(B) optimist is to sanguine

(C) cower is to coward

(D) dynamo is to supine

(E) jester is to lachrymose

52. Gold is to Midas as wisdom is to _____.

(A) Shakespeare

(B) conquest

(C) Athena

(D) Satan

(E) eagle

53. Tone is to deaf as _____.

(A) paint is to brush

(B) arm is to lift

(C) touch is to smell

(D) color is to blind

(E) sight is to sound

54. Radius is to diameter as _____.

(A) 9 is to 13

(B) 3 is to 8

(C) 4 is to 6

(D) 12 is to 15

(E) 5 is to 10

55. Oak is to acorn as _____.

(A) tree is to branch

(B) tulip is to bulb

(C) stable is to barn

(D) ruler is to line

(E) library is to book

56. $12\frac{1}{2}$% is to $\frac{1}{8}$ as _____.

(A) decade is to century

(B) 100% is to 1

(C) $\frac{6}{10}$ is to $\frac{1}{2}$

(D) $66\frac{2}{3}$% is to $\frac{2}{3}$

(E) second is to minute

57. Bibliophile is to library as _____.

(A) machinist is to repair

(B) infant is to adult

(C) dog is to biscuit

(D) neutron is to scientist

(E) philatelist is to post office

58. Galley is to kitchen as _____.

(A) ship is to house

(B) roof is to walls

(C) teeth is to stomach

(D) fabric is to yarn

(E) box is to package

59. Retina is to eye as _____.

(A) sun is to earth

(B) spur is to horse

(C) chair is to leg

(D) wagon is to car

(E) piston is to engine

60. Ballet is to choreographer as _____.

(A) pistol is to trigger

(B) dove is to peace

(C) play is to director

(D) paper is to ream

(E) people is to elect

GO ON TO THE NEXT SECTION

SECTION 3
QUANTITATIVE REASONING

Time: 35 minutes

25 Questions

Directions: Any figures that accompany questions in this section may be assumed to be drawn as accurately as possible EXCEPT when it is stated that a particular figure is not drawn to scale. Letters such as x, y and n stand for real numbers.

Each question consists of a word problem followed by four answer choices. You may write in your test booklet; however, you may be able to solve many of these problems in your head. Next take a look at the four answer choices and select the best one.

Example	If $3 + x = 5$, what is the value of x?	**Answer**
	(A) 0 (B) 1 (C) 2 (D) 3	Ⓐ Ⓑ ● Ⓓ

1. If $\frac{1}{4}$ of a number is less than 16, then the number is always _____ .
   (A) less than 64
   (B) equal to 4
   (C) greater than 4
   (D) equal to 64
   (E) greater than 64

2. In a basketball game, Team A scored 39 points and Team B scored more points than Team A. If Team B has 8 players, the average score of the players on Team B must have been at least how many points?
   (A) 1
   (B) 5
   (C) 6
   (D) 8
   (E) 12

3. In the triangle shown in Figure 1, what is the value of a?
   (A) 4
   (B) 6
   (C) 8

(D) 9
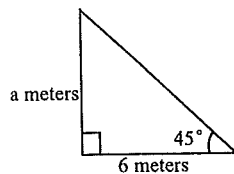(E) It cannot be determined from the information given.

Figure 1

4. A man bought a piece of land for 60 thousand dollars. Then he spent 3 million dollars to build a house on it. The cost of the house is how many times the cost of the land?
   (A) 5
   (B) 20
   (C) 50
   (D) 200
   (E) 500

5. If $(x - y) + 2 = 6$ and y is less than 3, which of the following CANNOT be the value of x?
   (A) -3

(B) 0

(C) $1\frac{1}{2}$

(D) 4

(E) 8

6. In Figure 2, the distance from A to D is 110 and the distance from A to B is equal to the distance from C to D. If the distance from A to B is twice the distance from B to C, how far apart are B and D?
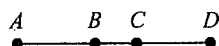
(A) 11

(B) 30

(C) 33

(D) 44

(E) 66

Figure 2

7. A book is placed on a flat table surface, as shown in Figure 3. Which of the following best shows all of the points where the book touches the table?
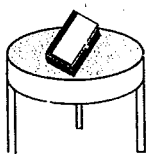

Figure 3

(A)

(B)

(C)

(D)

(E)

8. Which of the following can be expressed as $(J+5)\times 3$ where J is a whole number?

(A) 40

(B) 52

(C) 65

(D) 74

(E) 81

9. If $a-7=3b-3$, what does $a+5$ equal?

(A) $b-1$

(B) $4b-1$

(C) $3b+9$

(D) $3b+16$

(E) It cannot be determined from the information given.

10. According to a census report for Country A, 10.75 out of every 100 families live in rural areas. Based on this report, how many of the 20 million families in Country A live in rural areas?

(A) 430,000

(B) 215,000

(C) 43,000

(D) 4,300

(E) 430

11. $\frac{7}{8}-\frac{6}{8}=$ _____.

(A) 0.58

(B) 0.5

(C) 0.375

(D) 0.25

(E) 0.125

12. At sunset the temperature was 10 degrees. By midnight it had dropped another 16 degrees. What was the temperature at midnight?

(A) 12 degrees below zero.

(B) 6 degrees below zero.

(C) 0 degrees.

(D) 12 degrees above zero.

(E) 20 degrees above zero.

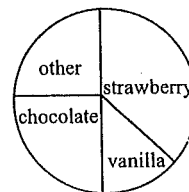13. According to the graph in Figure 4, how many chocolate ice cream cones were sold?

(A) 25

(B) 30

(C) 50

(D) 75

(E) 100

Flavors of 300 Ice Cream Cones Served

Figure 4

14. When 17 is divided by 4, the remainder is the same as when 82 is divided by _____.

(A) 10

(B) 9

(C) 8

(D) 7

(E) 6

15. According to the graph in Figure 5, what is the average number of 911 calls made from Monday through Thursday, inclusive?
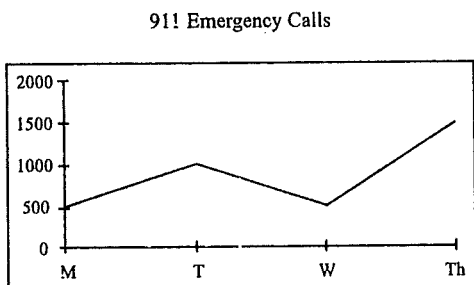
911 Emergency Calls

Figure 5

(A) 500

(B) 750

(C) 875

(D) 1,000

(E) 1,125

Questions 16-18 refer to the following definition.

For all real numbers y and z, let $y @ z = y \times z - 2$.

16. $3@9 = $ _____ .

(A) 15

(B) 19

(C) 21

(D) 25

(E) 27

17. If $y@3 = 10$, then y must equal _____ .

(A) 1

(B) 2

(C) 4

(D) 6

(E) 12

18. If $y = \dfrac{1}{8}$, for what value of z will $y@z$ equal 0?

(A) -4

(B) 4

(C) 6

(D) 8

(E) 16

19. A class of 35 girls and 24 boys built a haunted house for the Halloween carnival. If $\dfrac{1}{5}$ of the girls and $\dfrac{2}{3}$ of the boys participated, what fraction of the total class participated?

(A) $\dfrac{1}{5}$

(B) $\dfrac{2}{3}$

(C) $\dfrac{2}{15}$

(D) $\dfrac{3}{5}$

(E) $\dfrac{23}{59}$

20. The ratio of 7 to 4 is equal to the ratio of 35 to what number?

(A) 7

(B) 8

(C) 12

(D) 14

(E) 20

21. Which of the following is a multiple of both 4 and 5?

(A) 10

(B) 45

(C) 50

(D) 60

(E) 90

22. Five less than a number is one third of that number. What is the number?

(A) 12

(B) 4

(C) $\dfrac{15}{2}$

(D) $\dfrac{5}{3}$

(E) 6

23. On a test with 50 questions, Mark scored an 72%. How many questions did Mark answer correctly?

(A) 36

(B) 21

(C) 16

(D) 5

(E) 4

24. $\dfrac{1}{5} + \dfrac{2}{7} + \dfrac{3}{4} - \dfrac{1}{5} - \dfrac{1}{7} + \dfrac{1}{4} - \dfrac{1}{7} = $ _____ .

(A) $\dfrac{1}{2}$

(B) $\dfrac{2}{3}$

(C) 1

(D) 2

(E) $\dfrac{3}{4}$

25. The perimeter of a square with a side length of 5 is how much less than the perimeter of a rectangle with sides of length 8 and width 6?

(A) 8

(B) 6

(C) 4

(D) 2

(E) 0

GO ON TO THE NEXT SECTION

SECTION 4
READING COMPREHENSION

Time: 35 minutes

40 Questions

Directions: This section contains eight short reading passages. Each passage is followed by several questions based on its content. Answer the questions is following a passage on the basis of what is <u>stated</u> or <u>implied</u> in that passage. You may write in your test booklet.

Passage 1

One day, a thirsty fox fell into a well as she was getting a drink of water. She could not find a way to climb back up. After a short time, a thirsty goat came to the edge of the well, and seeing the fox below him, he asked if the water was safe to drink. Thinking quickly, the fox said the water was pure and delicious and suggested that the
(5)   goat come down to have a drink. The goat immediately jumped into the well. After he had enough to drink, he asked the fox how he could get back up and out of the well. The fox replied, "I have a plan. Put your front legs against the wall, and hold your horns up. I will climb up your back, onto your horns, and then I will jump out of the well. Once I'm out, I'll help you get out." The goat agreed, and the fox quickly got out
(10)   of the well. The goat called out to her: "Oh, Ms. Fox, you said you would help me get out of the well." The fox called down to the goat, "Friend, if you had half as many brains as you have hairs on your chin, you would not have jumped into the well without first thinking about how you would get out."

1. The fox told the goat the water was pure and delicious because _____ .
   (A) she was afraid the goat would not drink it if she said it was bad
   (B) she was lonely and wanted company
   (C) she had thought of a plan to get out of the well
   (D) she had tasted it and knew that it was good
   (E) she wanted to be kind to the goat

2. The fox's last words suggest that she thinks the goat is _____ .
   (A) uncomfortable   (B) unintelligent   (C) clumsy
   (D) angry   (E) amused

3. All of the following describe the fox EXCEPT which word?
   (A) Lying   (B) Selfish   (C) Inconsiderate
   (D) Clever   (E) Helpful

4. The fox gets out of the well by _____ .

    (A) using the goat as a ladder

    (B) using a rope

    (C) jumping out

    (D) climbing up the walls

    (E) calling for help until someone comes

5. The best way to state the lesson the fox's last words suggest is _____ .

    (A) take advantage of opportunities

    (B) drink before you get too thirsty

    (C) all goats are foolish

    (D) think before you act

    (E) never trust a fox

Passage 2

       Some myths are stories told by early civilizations to explain the origins of natural phenomena. The Greek myth that explains the origin of the seasons is about Demeter, the goddess of the harvest. She had a daughter, Persephone, whom she loved very much. Hades, god of the underworld, fell in love with Persephone, and he asked Zeus,

(5)   the ruler of the gods, to give Persephone to him as his wife. Zeus did not want to offend either Hades or Persephone, so he said he would not agree to the marriage, but neither would he forbid it. Hades, therefore, decided to take the girl without permission. As she was picking flowers in a meadow, he seized her and took her to the underworld. When Demeter found out what happened to Persephone, she became so angry that she

(10)   caused all plants to stop growing. People were in danger of starving. But Demeter swore that no food would grow until Persephone was returned to her. Zeus, still not wanting to offend Hades, set a condition for Persephone's return. She could go back to her mother if she had not eaten anything while she was in the underworld. Demeter did not know it, but Persephone had eaten several pomegranate seeds in the underworld.

(15)   When Zeus discovered this, he permitted a compromise. Persephone could spend part of the year with her mother, but because she had eaten the seeds, she must spend part of the year in the underworld. And when Persephone is in the underworld, Demeter is sad, and therefore will not let the crops grow. That is why we have winter, when plants do not grow. When Persephone returns, Demeter is happy, it is spring, and

(20)   plants begin to grow again.

6. Demeter is the goddess of _____ .

    (A) the underworld   (B) marriage   (C) food plants

    (D) the weather   (E) humanity

7. Myths are stories that _____.

   (A) have a religious purpose

   (B) are always about gods and goddesses

   (C) explain the origin of the seasons

   (D) try to explain nature

   (E) tell about mysteries

8. According to the story of Demeter, winter occurs because _____.

   (A) Demeter disliked Hades

   (B) Hades stole Persephone from her mother

   (C) Persephone is unhappy

   (D) Zeus did not give Hades permission to marry Persephone

   (E) Demeter is sad

9. Zeus did not give permission to Hades to marry Persephone because he _____.

   (A) wanted Persephone to be his wife

   (B) disliked him

   (C) was the ruler of all the gods and goddesses

   (D) did not want to upset him

   (E) thought this might make Demeter angry

10. Demeter stopped the growth of crops when _____.

   (A) Persephone was returned to her

   (B) Zeus did not forbid the marriage

   (C) Hades took Persephone to the underworld

   (D) she discovered what Hades had done

   (E) Persephone ate some pomegranate seeds

Passage 3

       Whose woods these are I think I know

       His house is in the village, though;

       He will not see me stopping here

       To watch his woods fill up with snow.

(5)   My little horse must think it queer

       To stop without a farmhouse near

       Between the woods and frozen lake

       The darkest evening of the year.

       He gives his harness bells a shake

(10)   To ask if there is some mistake.

       The only other sound's the sweep

       Of easy wind and downy flake.

The woods are lovely, dark and deep.

But I have promises to keep,

(15)   And miles to go before I sleep,

And miles to go before I sleep.

11. The speaker's horse "must think it queer to stop" because _____.
    (A) it is too cold
    (B) the horse is used to completing its journey
    (C) it is late at night
    (D) the horse is cold
    (E) they have run out of food

12. What is the author's purpose in repeating the last line twice?
    (A) To wake the reader.
    (B) To show the contrast between the village and the farm.
    (C) To add meaning to the word "sleep".
    (D) To catch the attention of the horse.
    (E) To reinforce the rhyme.

13. The woods seem to have a special meaning for the speaker. Which is most likely?
    (A) He is thinking about their owner in the village.
    (B) They seem to pull him in.
    (C) He is interested in farming.
    (D) He wants to build a new house there.
    (E) He is interested in buying them.

14. Which literary technique is used to define the relationship between the speaker and the horse?
    (A) Exaggeration   (B) Irony   (C) Contrast
    (D) Rhyme   (E) Alliteration

15. The best meaning for "downy" in the article is _____.
    (A) wind-swept   (B) cold   (C) soft
    (D) clean   (E) frozen

Passage 4

Compact discs (CDs), which may he found in over 25 million American homes, not to mention backpacks and automobiles, first entered popular culture in the 1980s. But their history goes back to the 1960s, when an inventor named James Russell decided to create an alternative to his scratched and warped phonograph records—a system that
(5)   could record, store, and replay music without ever wearing out.

The result was the compact disc (CD). Made from 1.2 mm of polycarbonate plastic, the disc is coated with a much thinner aluminum layer that is then protected with a film of lacquer. The lacquer layer can he printed with a iabel. CDs are typically

120 mm in diameter, and can store about 74 minutes of music. There are also discs that
(10)   can store 80, 90, 99 and 100 minutes of music, but they are not as compatible with various stereos and computers as the 74-minute size.

The information on a standard CD is contained on the polycarbonate layer, as a single spiral track of pits, starting at the inside of the disk and circling its way to the outside. This information is read by shining light from a 780 nm wavelength
(15)   semiconductor laser through the bottom of the polycarbonate layer. The light from the laser follows the spiral track of pits, and is then reflected off either the pit or the aluminum layer. Because the CD is read through the bottom of the disc, each pit looks like a bump to the laser.

Information is read as the laser moves over the bumps (where no light will be
(20)   reflected) and the areas that have no bumps, also known as land (where the laser light will be reflected off the aluminum). The changes in reflectivity are interpreted by a part of the compact disc player known as the detector. It is the job of the detector to convert the information collected by the laser into the music that was originally recorded onto the disc. This invention brought 22 patents to James Russell, who today
(25)   says he working on an even better system for recording and playing back music.

16. According to the passage, why did James Russell invent the CD?
    (A) He was tired of turning over his records to hear both sides.
    (B) He wanted to record more music on a new format.
    (C) He wanted a purer, more durable sound than he could get from vinyl records.
    (D) He was interested in getting patents.
    (E) He wanted to work with lasers.
17. What would happen if the detector on a CD player malfunctioned?
    (A) The spiral track would not be read properly.
    (B) The pits and land would look like one unit.
    (C) The changes in reflectivity would be absorbed back into the laser.
    (D) The music would play backwards.
    (E) The information read by the laser would not be converted into music.
18. Paragraph 3, explains all of the following EXCEPT _____.
    (A) how the information on a CD is read
    (B) why semiconductor lasers were invented
    (C) where information is stored on a CD
    (D) what pits and bumps are
    (E) the purpose of the aluminum layer of a CD

Passage 5

You know, of course, that in China the Emperor is a Chinaman, and all the people around him are Chinamen too. It happened a good many years ago, but that's just why

it's worthwhile to hear the story, before it is forgotten. The Emperor's palace was the
most splendid in the world; entirely and altogether made of porcelain, so costly, but so
(5) brittle, so difficult to handle that one had to be terribly careful. In the garden were to
be seen the strangest flowers, and to the most splendid of them silver bells were tied,
which tinkled so that nobody should pass by without noticing the flowers. Oh, the
Emperor's garden had been laid out very smartly, and it extended so far that the
gardener himself didn't know where the end was. If you went on and on, you came into
(10) the loveliest forest with high trees and deep lakes. The forest went right down to the
sea, which was blue and deep; tall ships could sail right in under the branches of the
trees; and in the trees lived a nightingale, which sang so sweetly that even the poor
fisherman, who had many other things to do, stopped still and listened when he had
gone out at night to take up his nets and then heard the nightingale.

—from *The Nightingale* by
Hans Christian Andersen

19. The author wants to tell this story _____.

(A) because he is a writer and storyteller

(B) in order to describe the garden

(C) before it is forgotten

(D) to teach us about China

(E) because he can't forget the nightingale

20. The Emperor's palace was made of _____.

(A) porcelain

(B) large stones and boulders

(C) silver bells

(D) high trees

(E) brick

21. Silver bells were tied to flowers in the garden to _____.

(A) remind the gardener not to pick them

(B) play soft melodies

(C) frighten birds and mice away

(D) sparkle in the sun

(E) draw attention to their beauty

22. The Emperor's garden _____.

(A) led into a lovely forest

(B) housed a rare nightingale

(C) was too large to care for

(D) was a source of pleasure for all in the kingdom

(E) was very strange

23. The forest _____.

(A) contained many rare animals

(B) housed the nightingale

(C) was a fisherman's hiding place

(D) was an easy place in which to get lost

(E) was dark and threatening

Passage 6

The history of modern pollution problems shows that most have resulted from negligence and ignorance. We have an appalling tendency to interfere with nature before all of the possible consequences of our actions have been studied indepth. We produce and distribute radioactive substances, *synthetic* chemicals, and many other

(5)   potent compounds before fully comprehending their effects on living organisms. Our education is dangerously incomplete.

It is often argued that the purpose of science is to move into unknown territory, to explore, and to discover. It can be said that similar risks have been taken before, and that these risks are necessary to technological progress.

(10)   These arguments overlook an important element. In the past, risks taken in the name of scientific progress were restricted to a small place and a brief period of time. The effects of the processes we now strive to master are neither localized nor brief. Air pollution covers vast urban areas. Ocean pollutants have been discovered in nearly every part of the world. Synthetic chemicals spread over huge stretches of forest and

(15)   farmland may remain in the soil for decades. Radioactive pollutants will be found in the biosphere for generations. The size and persistence of these problems have grown with the expanding power of modern science.

One might also argue that the hazards of modern pollutants are small compared to the dangers associated with other human activity. No estimate of the actual harm done

(20)   by smog, fallout, or chemical residues can obscure the reality that the risks are being taken before being fully understood.

The importance of these issues lies in the failure of science to predict and control human intervention into natural processes. The true measure of the danger is represented by the hazards we will encounter if we enter the new age of technology

(25)   without first evaluating our responsibility to the environment.

24. According to the author, the major cause of pollution is the result of _____.

(A) a lack of understanding of the history of technology

(B) scientists who are too willing to move into unknown territory

(C) changing our environment before understanding the effects of these changes

(D) not passing enough laws

(E) designing synthetic chemicals to kill living organisms

25. The author believes that the risks taken by modern science are greater than those taken by earlier scientific efforts because _____ .

(A) science is progressing faster than ever before

(B) the materials used are more dangerous to scientists

(C) the problems are greater

(D) technology has produced more dangerous chemicals

(E) the effects may be felt by more people for a longer period of time

26. The author apparently believes that the problem of finding solutions to pollution depends on

_____ .

(A) overcoming technical difficulties

(B) the willingness of scientists to understand possible dangers before using new products in the environment

(C) the removal of all potential pollutants from their present uses

(D) a new age of science that will repair the faults of our present technology

(E) the removal of present hazards to the environment

27. The author seems to feel that the attitude of scientists toward pollution has been _____ .

(A) nonchalant   (B) ignorant   (C) concerned

(D) confused   (E) naive

28. The word *synthetic* means _____ .

(A) man-made   (B) progressive   (C) unsafe

(D) polluting   (E) new

Passage 7

There were moments of waiting. The youth thought of the village street at home before the arrival of the circus parade on a day in the spring. He remembered how he had stood, a small thrillful boy, prepared to follow the band in its faded chariot. He saw the yellow road, the lines of expectant people, and the sober houses. He particularly

(5) remembered an old fellow who used to sit upon a cracker box in front of the store and pretend to despise such exhibitions. A thousand details of color and form surged in his mind.

Someone cried, "Here they come!" There was rustling and muttering among the men.

(10) They displayed a feverish desire to have every possible cartridge ready to their hands. The boxes were pulled around into various positions, and adjusted with great care.

The tall soldier, having prepared his rifle, produced a red handkerchief of some kind. He was engaged in knitting it about his throat with exquisite attention to its

(15) position, when the cry was repeated up and down the line in a muffled roar of sound.

"Here they come! Here they come!" Gun locks clicked.

Across the smoke-infested fields came a brown swarm of running men who were giving shrill yells. They came on, stooping and swinging their rifles at all angles. A flag, tilted forward, sped near the front.

29. In the first paragraph, the youth is primarily concerned with _____.

   (A) preparing for the upcoming battle
   (B) planning his day at the circus
   (C) watching a soldier tie a handkerchief
   (D) describing a turning point in his life
   (E) reliving a fond childhood memory

30. What is meant by the exclamation "Here they come!" in line 8?

   (A) A group of men selling handkerchiefs is on its way.
   (B) The enemy soldiers are advancing.
   (C) The youth's family is arriving to save him.
   (D) The circus is coming to town.
   (E) A band in a chariot is approaching.

31. The tone of the passage undergoes a change from the first to the second paragraph that can best be described as a movement from _____.

   (A) informality to formality
   (B) anger to amusement
   (C) reminiscence to anticipation
   (D) respect to indifference
   (E) reluctance to fear

32. According to the passage, all of the following are ways the soldiers prepare for battle EXCEPT _____.

   (A) saddling horses
   (B) gathering cartridges
   (C) positioning ammunition
   (D) priming their guns
   (E) tying handkerchiefs

33. Why are the men in the last paragraph carrying a flag?

   (A) It is going to be burned in a public demonstration.
   (B) It is going to be raised in the youth's village.
   (C) It has been damaged and needs to be mended.
   (D) It needs to be protected from gunfire.
   (E) It represents the side they are fighting for.

Passage 8

The cowboy of the American West is an enduring icon in popular culture, but Hawaiian cowboys predated their American counterparts by several decades. In 1792, King Kamehameha the Great of Hawaii received gifts of beef cattle, goats, sheep, and horses, from Captain George Vancouver. The introduction of these unfamiliar animals
(5)   caused unrest among the native islanders, because the unruly animals often trampled the crops in their fields. Initially, the king protected his imports from wrathful Hawaiians under kapu laws. But in 1830, Kamehameha III decided to hire a few Spanish vaqueros from California to keep the animals under control. Soon the Hawaiians were riding, roping, and lassoing alongside the Spanish cowboys.

34. It can be inferred from the passage that the American cowboy _____.
    (A) emerged in the West later than his counterpart in Hawaii
    (B) was not able to lasso as weft as the Hawaiian cowboy
    (C) taught the Hawaiians how to ride and lasso
    (D) accompanied the shipment of horses and cattle to Hawaii
    (E) did not understand the Hawaiians' opposition to horses

35. According to the passage, all of the following are true about horses and cattle EXCEPT _____.
    (A) they were destructive to Hawaiian property
    (B) they were found to be too expensive to import
    (C) they were unfamiliar to Hawaiians before 1792
    (D) they were introduced to Hawaii in the 18th century
    (E) they were protected by Hawaiian law

36. According to the passage, the Hawaiian cowboys _____.
    I . were taught to ride by the Spanish vaqueros
    II . existed earlier than the American cowboys
    III . proved better at roping and lassoing than their American counterparts
    (A) I only
    (B) II only
    (C) I and II only
    (D) II and III only
    (E) I , II and III

37. This passage is primarily about _____.
    (A) the Spanish relationship with Hawaii
    (B) the history of horses in Hawaii
    (C) the introduction of cowboys to Hawaii
    (D) the roping of cattle
    (E) the history of King Kamehameha

38. The attitude of the writer toward the subject is _____.
    (A) neutral   (B) confused   (C) elated
    (D) biased   (E) condescending

39. As it is used in line 6, "wrathful" most nearly means _____.

    (A) vengeful   (B) accommodating   (C) confused

    (D) tolerant   (E) enraged

40. Which of the following questions is NOT answered by the passage?

    (A) What effect did the vaqueros have on the animals?

    (B) What can be implied about the author's attitude toward the cowboys?

    (C) For how many years did the animals cause unrest in Hawaii?

    (D) How did the king use kapu laws in Hawaii to protect animals?

    (E) How did Hawaiians view Capt. George Vancouver's gifts?

GO ON TO THE NEXT SECTION

SECTION 5
MATHEMATICS ACHIEVEMENT

Time: 40 minutes

25 Questions

Directions: Each question is followed by four suggested answers. Read each question and then decide which one of the four suggested answers is best.

Find the row of spaces on your answer document that has the same number as the question. In this row, mark the space having the same letter as the answer you have chosen. You may write in your test booklet.

Example

(5 + 3) − 2 =

(A) 6

(B) 8

(C) 10

(D) 13

Answer

●(B)(C)(D)

The correct answer to this question is lettered A, so space A is marked.

---

1. The polygon in Figure 1 has a perimeter of 35. If each side of the polygon has the same length, what is the length of one side?
   (A) 3
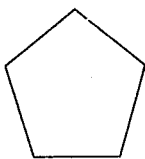   (B) 4
   (C) 5
   (D) 6
   (E) 7

Figure 1

2. Mr. Stuart sold peppermint candy to 18 customers and caramel candy to 33 customers. If 4 of these customers bought both types of candy, how many bought only caramel candy?
   (A) 29
   (B) 25
   (C) 21
   (D) 17
   (E) 13

3. In a bag of 36 balloons, there is an equal number of balloons of each color. Which of the following CANNOT be the number of different colors in the bag?
   (A) 2
   (B) 3
   (C) 4
   (D) 5
   (E) 6

4. Which of the following is a whole number less than 14 and also a whole number between 12 and 18?
   (A) 11
   (B) 12
   (C) 12.5
   (D) 13
   (E) 14

5. According to the graph in Figure 2, Susan spent about how many hours watching Soap Operas?
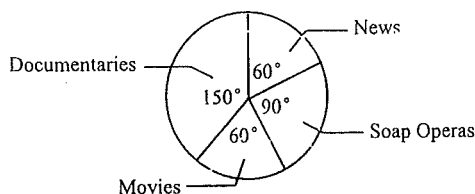
HOW SUSAN SPENT 12 HOURS
WATCHING TV

Figure 2

(A) 2

(B) 3

(C) 4

(D) 6

(E) 9

6. If $\frac{1}{3} R = 12$, then $\frac{3}{4} R = $ _____.

(A) 27

(B) 20

(C) 16

(D) 12

(E) 8

7. Which of the following is closest to $\frac{1}{4}$ of 49?

(A) 0.26×50

(B) 0.41×50

(C) 0.26×40

(D) 0.41×40

(E) 41×40

8. According to the graph in Figure 3, the average sales of Company M from 1993 to 1997 was _____.
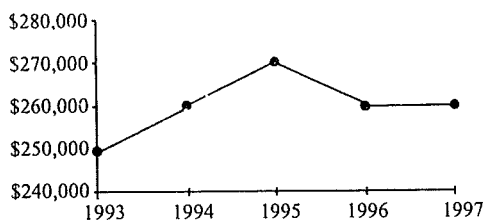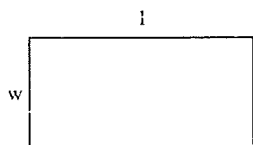
SALES OF COMPANY M:1993-1997

Figure 3

(A) $ 250,000

(B) $ 260,000

(C) $ 265,000

(D) $ 270,000

(E) $ 275,000

Questions 9-10 refer to the following definition.
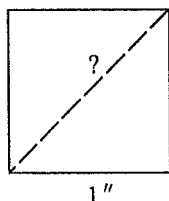
For all real numbers u and v, $u \oslash v = u - \left(1 - \frac{1}{v}\right)$. $\left[$ Example: $3 \oslash 2 = 3 - \left(1 - \frac{1}{2}\right) = 3 - \frac{1}{2} = 2\frac{1}{2}.\right]$

9. Which of the following is equal to $4 \oslash 5$?

(A) 0

(B) 1

(C) $3\frac{1}{5}$

(D) $3\frac{4}{5}$

(E) 20

10. If $a \oslash 3 = 2\frac{1}{3}$, then $a = $ _____.

(A) $\frac{2}{3}$

(B) 3

(C) 4

(D) $4\frac{2}{3}$

(E) 5

11. In one and a half days a point on the earth's surface rotates through an angle of approximately _____.

(A) 90°

(B) 180°

(C) 360°

(D) 540°

(E) 720°

12. Which of the following groups is arranged in order from smallest to largest?

(A) $\frac{3}{7}, \frac{11}{23}, \frac{15}{32}, \frac{1}{2}, \frac{9}{16}$

(B) $\frac{3}{7}, \frac{15}{32}, \frac{11}{23}, \frac{1}{2}, \frac{9}{16}$

(C) $\frac{11}{23}, \frac{3}{7}, \frac{15}{32}, \frac{1}{2}, \frac{9}{16}$

(D) $\frac{15}{32}, \frac{1}{2}, \frac{3}{7}, \frac{11}{23}, \frac{9}{16}$

(E) $\frac{1}{2}, \frac{5}{32}, \frac{3}{7}, \frac{11}{23}, \frac{9}{16}$

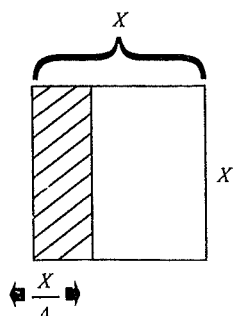13. The rectangle below has a length three times as long as its width. If its width is x, its perimeter is _____.

(A) 6

(B) $2x^2$

(C) $4x$

(D) $6x$

(E) $8x$

14. This square has a side of $1''$. The diagonal distance from one corner to another is _____.

(A) 1 inch

(B) $\sqrt{2}$ inches

(C) $\sqrt{3}$ inches

(D) 2 inches

(E) 3 inches

15. A plumber needs eight sections of pipe, each $3'2''$ long. If pipe is sold only by the $10'$ section, how many sections must he buy?

(A) 1

(B) 2

(C) 3

(D) 4

(E) 5

16. The ratio of the area of the shaded part to the unshaded part is _____.

(A) $x:\dfrac{x}{3}$
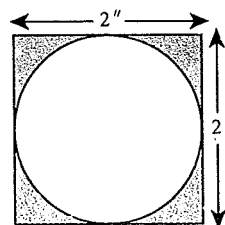
(B) $2:1$

(C) $1:3$

(D) $1:2$

(E) $3:1$

17. An airplane on a transatlantic flight took 3 hours 40 minutes to get from New York to its destination, a distance of 2,000 miles. To avoid a storm, however, the pilot went off his course, adding a distance of 400 miles to the flight. Approximately how fast did the plane travel?

(A) 655 mph

(B) 710 mph

(C) 738 mph

(D) 750 mph

(E) 772 mph

18. A photograph measuring $7''$ wide $\times$ $9''$ long must be reduced in size to fit a space six inches long in an advertising brochure. How wide must the space be so that the picture remains in proportion?

(A) $1\dfrac{4}{7}''$

(B) $2\dfrac{6}{7}''$

(C) $4\dfrac{2}{3}''$

(D) $5\dfrac{3}{5}''$

(E) $8\dfrac{3}{4}''$

19. The total area of the shaded part of the figure is _____.

(A) $\dfrac{2}{7}$ in.^{2}

(B) $\frac{1}{2}$ in.^{2}

(C) $\frac{6}{7}$ in.^{2}

(D) $1\frac{3}{7}$ in.^{2}

(E) $2\frac{1}{3}$ in.^{2}

20. A certain population of microbes grows according to the formula $P = A \times 2^n$, where P is the final size of the population, A is the initial size of the population, and n is the number of times the population reproduces itself. If each microbe reproduces itself every 3 minutes, how large would a population of only one microbe become after 3 hours?

   (A) 16
   (B) 64
   (C) 128
   (D) 1,028
   (E) 4,096

21. If $z = y + 4$, what does $4z + 3$ equal?

   (A) $y + 7$
   (B) $4y + 15$
   (C) $4y + 17$
   (D) $4y + 19$
   (E) It cannot be determined from the information given.

22. If x is greater than 0 but less than 1, and y is greater than x, which of the following is the LEAST?

   (A) $\frac{y}{x}$

   (B) $\frac{x}{y}$

   (C) xy

   (D) $\frac{1}{x - y}$

(E) It cannot be determined from the information given.

23. In a restaurant, there are x tables than can each seat 4 people and there are y tables that can each seat 8 people. What is the maximum number of people that may be seated?

   (A) $4x + 8y$
   (B) $8x + 4y$
   (C) $12x + 12y$
   (D) $12xy$
   (E) $32xy$

24. Mrs. Smith bought 3 square pieces of fabric. A side of the largest piece is 2 times as long as a side of the middle one, and a side of the middle one is 3 times as long as a side of the smallest one. The area of the largest piece is how many times the area of the smallest piece?

   (A) 112
   (B) 81
   (C) 36
   (D) 9
   (E) 3

25. Mr. Dali's car uses $\frac{3}{4}$ gallons of gas each time he drives to work. If his gas tank holds exactly 9 gallons of gas, how many tanks of gas does he need to make 30 trips to work?

   (A) $1\frac{1}{2}$

   (B) $2\frac{1}{2}$

   (C) 4
   (D) 6
   (E) 9

参考答案

SECTION 1: WRITING THE ESSAY

There are many different reasons that people travel to new places. One of the most common reasons is to see a new place, culture, or way of life. For a total outsider with only a short amount of time, museums offer a glimpse into these ways of life through specially designed education, cultural insights, and entertainment.

Different place has different history. And the most convenient way to know the history is to visit the local museum. Last year when I traveled to Xi'an, an old city, I went to the history museum to explore the course of its development. With the background knowledge provided by the museum, I found that it was easier for me to understand the city. So the museum can clear away the barriers between tourists and the city by making them familiar with its history. To a tourist, the most attractive part of a place is usually its customs, which can be demonstrated by the local museum.

Museums serve as a bridge between tourists and the place they travel to. A trip to the New York Metropolitan Museum of Art would tell the visitor that Americans are interested in art from all over the world, but by comparing the size of the European Art collection with that of the Asian Art collection, one might conclude that Americans feel a strong cultural affinity with European Art. Similarly, a tourist to a place like San Francisco, where there is a large museum devoted solely to Asian Art, might conclude that people from San Francisco have a stronger affinity to Asian culture.

At the same time, many people who travel simply want to relax and be entertained, and museums also provide an excellent venue for leisure. Even most nominally educational museums provide exciting attractions like movie theaters and special cultural performances such as dances, gourmet dinners, lectures, and musical performances from jazz to rock and roll. Many museums in the United States hold special nights once a week where young people can drink and socialize. Museums are not only spaces for education and culture, but have also become important entertainment and social venues.

SECTION 2: VERBAL REASONING

1. C

   Perilous means risky or dangerous. Construction of skyscrapers is perilous work.

2. B

   Stationary means not moving or not movable. It is the adjective form of the noun station. Choice (D) refers to the homophone stationery. Unlike Easter, Christmas is a stationary holiday; it always occurs on the same date.

3. D

   To transcribe is to write out in full or to make a recording. The court stenographer

transcribed the full proceedings of the trial.

4. A

Proficient means highly skilled, competent, or adept. The concert pianist is proficient at the art.

5. A

To deceive is to make a person believe what is not true. The purpose of a lie is to deceive.

6. B

Agile means deft, active, and lively. Prize-winning gymnasts are always agile.

7. E

The duration is the time that a thing continues or lasts. The duration of a school semester is a four-month term.

8. C

Ambiguous means having two meanings or being vague and uncertain. The prefix ambi-means both and implies that both possible interpretations might be correct and therefore neither is clear. Her ambiguous answer left us uncertain as to whether she meant "Yes" or "No".

9. E

A prerogative is a right, privilege, or special advantage. The aged and the disabled have the prerogative of sitting at the front of the bus.

10. A

That which is intriguing excites interest and curiosity and is fascinating. His interpretation of the event presents an intriguing new theory.

11. C

The agenda is the program of things to be done or the schedule. Preparation of next year's budget was the top item on the agenda for the meeting.

12. B

Credible means plausible, reliable, or believable. The presence of many squirrels in my yard is a credible explanation for the many holes.

13. C

Placid means tranquil, calm, or peaceful. Lake Placid in New York is so placid that its waters are seldom stormy.

14. A

To intervene is to come between two people or things either to interfere or to influence positively. Intervene is a verb. An intermediary may intervene in a dispute.

15. B

Mundane means commonplace, earthly, or ordinary. Every morning I perform the mundane tasks of brushing my teeth and making my bed.

16. A

To dehydrate is to remove water, therefore dehydrated means waterless. The root hydr-refers to water, and the prefix de-is a negative prefix. Dehydrated foods are lightweight and are easy to store for long periods of time.

17. C

Prevalent means widely existing, prevailing, or generally accepted. Preeminent means excelling. The prevalent mood among the Boy Scouts was one of eager anticipation.

18. A

Succinct means brief and to the point. The legislator gave a succinct background of the reasons for the proposed law.

19. E

That which is nocturnal happens at night. Bats do not fly about in the daytime because they are nocturnal creatures.

20. A

Equitable means fair and just. You should see the root equal in this word. The will provided for an equitable distribution of the property.

21. B

To saturate is to wet something thoroughly or soak it. You saturate a sponge in water, for example.

22. C

Genteel describes something elegant, aristocratic or refined.

23. C

Winsome means pleasing or charming, such as a winsome smile.

24. C

To reproach means to express disapproval or disappointment in someone. (A) is tempting, but you can complain without blaming anything specific.

25. C

To demonstrate means to explain clearly or show.

26. B

A camouflage is a disguise or a concealment. An outfit, (D), may or may not be a camouflage.

27. B

Aghast is an adjective that means to be struck with amazement or horror—in other words, to be shocked.

28. A

To recollect means to remember.

29. A

To initiate means to begin or start.

30. C

To suffocate is to choke or deprive of air.

31. B

A fossil is a substance which is petrified. A solution is a substance which is dissolved. Wood (D) is not necessarily hard, nor are snowflakes (E) necessarily wet.

32. A

A sphere is round in shape in the same way that a honeycomb is hexagonal in shape. A protractor (D) is used to measure an angle.

33. B

To be picky is to be extremely careful. Similarly, to be exhausted is to be extremely tired. To be alert (E) is to be awake.

34. E

A cave is the rounded, hollowed out part of a rock, just as an apse is the rounded, hollowed out part of a church. A plateau (A) is a large flat rock.

35. E

Lemonade is made from lemons, just as paper is made from wood. Juice (C) may or may not be made from cherries; it can be made from other ingredients as well.

36. C

A frog is a type of amphibian, as a whale is a type of mammal.

37. C

A dentist uses a drill in the way that a surgeon uses a scalpel. A doctor doesn't use a stretcher—his patients do. And though a farmer may harvest grain, he does not by definition use it.

38. A

A mosaic is a picture made up of individual tiles, the way a tapestry is a picture made up of individual threads. A sweater (E) may or may not be made out of wool.

39. E

A pebble is a tiny bit of rock, just as a drop is a tiny bit of liquid.

40. C

A levee is the border of a river, just as a shoulder is the border of a road. A path may or may not go through a forest.

41. D

When an injury heals, it disappears. When a malfunction is repaired, it disappears. In both cases, the thing that heals or is repaired gets better, which is why (B) is not quite right.

42. E

A jog is a slow run; a sprint is a fast run. A trot is, a slow run for a horse, while a gallop is a fast run. (B) means to wander about—not at a great speed, while (C) means to stroll. (A) means flying, not running.

43. C

A bone is one part of the structural system of the body—the system that holds it up. Similarly, a beam—a long piece of timber or steel—is one part of the structural system that holds up a building. (D) may be tempting, but floors don't generally connect to other floors the way beams and bones do.

44. C

Amorphous means "without shape". So amorphous is to shape as odorless is to odor, or scent.

45. C

Another relationship of opposites. A vain person is, by definition, not humble. Similarly, an extroverted or outgoing person is, by definition, not shy. (E) may be tempting since boisterous means noisy, exuberant. But anxious people aren't by definition quiet; one may be anxious and act boisterously by talking too much out of nervousness, for example. Cantankerous in (A) means bad-tempered, quarrelsome, and discursive in (B) means to talk in a rambling way.

46. A

You study for a test the way you rehearse for a play. One is preparation for the other. (E) seems close, but apply is not quite "preparation" for a job.

47. E

You smile when you're happy and frown when you're sad or angry. You cheer to signal your approval and jeer your disapproval of a sports team, for example. Wince in (C), means to express pain.

48. A

To peel a banana is to pull off its outer covering. To husk an ear of corn is to pull off its outer covering (also called a husk).

49. C

Tactile refers to anything perceptible through the sense of touch, just as olfactory refers to anything perceptible through the sense of smell. If they had been correct, (A) would have read, "sight is to visual", and (D), "taste is to oral".

50. B

Articulateness is the quality of speaking or writing in a clear manner. Similarly, legibility is handwriting that's clear.

51. B

The relationship is object to its function. A poltroon (coward) is by definition pusillanimous (cowardly). An optimist is by definition sanguine (confident).

52. C

Gold was important to Midas; wisdom was important to Athena. The relationship is worker and creation. Choices (E) and (B) are incorrect because the relationship is item to category. Choice (D) is incorrect because the relationship is synonymous. Choice (A) is incorrect because the relationship is type to characteristic.

53. D

One who is deaf cannot perceive tone; one who is blind cannot perceive color. This is the analogy of action of object. The other answers cannot be correct; choice (C) is incorrect because touch and smell are both senses and equal; therefore, they cannot parallel "tone is to deaf". By the same token, choice (A)

is incorrect because one uses a brush to paint is close to the proper answer; however, the relationship is object to its function. A brush is used to paint.

54. E

The radius is half the diameter of a given circle. Similarly, 5 is half of 10. This is the analogy of part to whole. There appears to be no relationship with choices (A) and (B). Choices (C) and (D) do have a relationship of sorts, but it is not one half of the question.

55. B

An oak grows from an acorn; a tulip grows from a bulb. This is the cause-to-effect relationship. Notice that in choice (C), the relationship is word to synonym. Both a stable and a barn are shelters for animals. Choice (A) is whole to part. Part of a tree is a branch. Choice (E) also has the relationship of part to whole. Part of a library is the books. Choice (D) has the relationship of object to its function. A ruler will allow you to make a line.

56. D

$12\frac{1}{2}$% is equal to $\frac{1}{8}$ as $66\frac{2}{3}$% is equal to $\frac{2}{3}$. Both are fractions. The relationship is one of equals or synonyms.

Choice (A) indicates a relationship of part to whole; a decade is one tenth of a century and is therefore incorrect for the relationship being sought; the same is true for choice (E). A second is part of a minute. Choice (B) is incorrect because there is not the relationship of equality that we need for the question.

Choice (C) is incorrect because $\frac{6}{10}$ does NOT equal $\frac{1}{2}$. The premise is incorrect.

57. E

A bibliophile, one who loves books, will spend time in the library. A philatelist, one who collects stamps, will spend time in the post office. The relationship is worker to workplace. Choice (C) is incorrect because the relationship is object to its function. A dog should eat a biscuit. Choices (A) and (D) are both the worker and creation relationship. None of these other choices have the worker to workplace relationship of the question.

58. A

A galley is a kitchen, but on a ship, not in a house. The relationship is synonymous. Choice (D) is incorrect because it is part to whole. Yarn makes fabric. Choice (C) has no relationship that can fit with the question. Both items are part of the human body, but without the relationship of the question. Choice (E) has the relationship of object to its function: a box makes a package. Choice (B) is incorrect because a roof holds up the walls and is the relationship of object to function.

59. E

The retina helps the eye function. A piston helps an engine to work. The relationship is cause to effect. Choice (D) is not correct because while both a wagon and a car are modes of transportation, their actual function is totally different. The relationship is item to category. Choice (C) has the relationship of part to whole. A leg is part of the chair. Choice (A) names two celestial objects; the relationship would be item to category. Choice (B) has the relationship of object to its function. One uses a spur to manipulate a horse.

60. C

A choreographer directs a ballet as a director directs a play. The relationship is worker and creation. Choice (D) is not correct because the relationship is part to whole: 500 pages equal a ream. Choice (E) is worker and creation: the people elect. Choice (A) is part to whole: a trigger is part of a piston. Choice (B) is symbolic: a dove is the sign of peace.

SECTION 3: QUANTITATIVE REASONING

1. A

Call the number N. Write an inequality using the information given. Remember, "of" means multiply. $\frac{1}{4} \times N < 16$. We need to isolate N, our unknown value. Multiplying both sides by the reciprocal of $\frac{1}{4}$ which is 4 produces a result of $N < 16 \times 4$, and thus $N < 64$. (A) is correct.

2. B

The minimum number of points Team B could have scored is one more than Team A or 40. Using the average formula, $\text{Average} = \frac{\text{Sum of the terms}}{\text{Number of terms}}$. We can plug in our given information: $\text{Average} = \frac{40 \text{ points}}{8 \text{ players}}$. Thus the average score of the players on Team B must have been at least 5 points per player.

3. B

The sum of the 3 interior angles of any triangle is 180 degrees. Figure 1 indicates that two of the angles have degree measures of 90 and 45. So the degree measure of the third angle is $180 - 90 - 45 = 45$. So this is a $45 - 45 - 90$ triangle. In any triangle, the sides opposite two equal angles must be equal. Hence, $a = 6$.

4. C

Here, we need to divide 60,000 into 3,000,000: $\frac{3,000,000}{60,000}$. Simply cancel out 4 zeros from the bottom and 4 zeros from the top. We now have $\frac{300}{6}$ which equals 50.

5. E

The question states that y is less than 3, and we want the value which x cannot equal, so let's solve the equation for x in terms of y and see if we can conclude something about x. The equation is $(x - y) + 2 = 6$. First subtract 2 from both sides. Then $(x - y) = 6 - 2$, or $(x - y) = 4$. The parentheses are not needed, so $x - y = 4$. Adding y to both sides, we have that $x = y + 4$. Since y is less than 3, $y + 4$ must less than 7. Now $x = y + 4$, so x must be less than 7. Now look for a choice which is not less than 7. Only (E), 8, is not less than 7. So x cannot be 8 and (E) is correct.

6. E

Segment $AD = 110$. Because the length of AB is 2 times the length of BC, let $BC = x$ and let $AB = 2x$. Since $AB = CD$, let $CD = 2x$ also. The total length of $AD = AB + BC + CD = 2x + x + 2x = 5x = 110$. Hence, $x = 22$ and $BD = BC + CD = x + 2x = 3x = 3 \times 22 = 66$.

7. E

The question asks for all the points. (A) is incorrect because it only includes the rectangular boundary of the set of all the points that touch the table; it does not include the points inside this rectangle which also touch the surface of the table. (E) indicates all the points and is correct.

8. E

The question is not asking for a value of J. Indeed, J could be any whole number.

The question is asking for the answer choice which can be written in the form $(J + 5) \times 3$, where J is a whole number. Since 3 is a factor of $(J + 5) \times 3$, the choice we're looking for must be a multiple of 3. A whole number is a multiple of 3 if and only if the sum of its digits is a multiple of 3. Looking at the answer choices, only the sum if the digits of (E), 81, is a multiple of 3. That is, the sum of the digits of 81, is a multiple of 3. That is, the sum of the digits of 81 is $8 + 1 = 9$, which is a multiple of 3. So (E) is correct.

9. C

Using the information given, isolate a: $a = 3b - 3 + 7 = 3b + 4$. Thus, $a = 3b + 4$. Next add 5 to both sides of this equation: $a + 5 = 3b + 4 + 5 = 3b + 9$.

10. B

They give us 10.75 out of 100 which is easily translated into 10.75%. Hence, 10.75% of (multiplication) 20,000,000 is $\frac{10.75}{100} \times 20,000,000$. Cancel out two zeros from the 100 in the denominator and from the 20,000,000 in the numerator to get $10.75 \times 200,000 = 215,000$.

11. E

A quick look at the answer choices tells you that your answer needs to be in decimal form. So, first convert to decimal form, then subtract. $0.875 - 0.75 = 0.125$. Another approach is to subtract the fractions to get $\frac{7}{8} - \frac{6}{8} = \frac{1}{8}$, convert $\frac{1}{8}$ to 0.125.

12. B

The temperature was originally 10 degrees. It then dropped 16 degrees, so you need to subtract 16 from 10: $10 - 16 = -6$. So the temperature at midnight was -6, or 6 degrees below zero, (B).

13. D

According to the graph, the slice labeled "chocolate" represents $\frac{1}{4}$ of the entire pie. Since a total of 300 cones were sold, $\frac{1}{4} \times 300 = 75$ chocolate cones were sold.

14. B

First determine what the remainder is when 17 is divided by 4. Four goes into 17 four times with a remainder of one. So you need to find which choice will divide into 82 and leave a remainder of one. Since $9 \times 9 = 81$, 82 will leave a remainder of one when divided by nine. The answer is (B).

15. C

The average formula is Average $= \frac{\text{Sum of the terms}}{\text{Number of terms}}$. Look at the graph to find the number of 911 calls made for each of the four days, and plug them into the formula:
$$\frac{500 + 1,000 + 500 + 1,500}{4} = \frac{3,500}{4} = 875$$

16. D

This is a straightforward symbolism problem. Plug in the values for y and z and solve.
$$y@z = y \times z - 2$$
$$3@9 = 3 \times 9 - 2$$
$$= 27 - 2$$
$$= 25$$

17. C

Plug the given information into the equation and solve for y.
$$y@z = y \times z - 2$$
$$y@3 = 10$$
$$3y - 2 = 10$$
$$3y = 12$$
$$y = 4$$

18. E

Plug the given information into the equation and solve for z.

$$y@z = y \times z - 2$$

$$\frac{1}{8}@z = 0$$

$$\frac{1}{8} \times z - 2 = 0$$

$$\frac{1}{8}z = 2$$

$$z = 16$$

19. E

There are 35 girls and 24 boys in the class, a total of 59 students. One-fifth of the girls, or $\frac{35}{5} = 7$, and two-thirds of the boys, or $\frac{2}{3} \times 24 = 16$, ran the haunted house. So a total of $7 + 16 = 23$ students participated. Since the class has 59 students in all, $\frac{23}{59}$ of all the students participated.

20. E

Set up a proportion, letting N equal the number you are looking for:

$$\frac{7}{4} = \frac{35}{N}$$

$$4 \times 35 = 7N$$

$$140 = 7N$$

$$20 = N$$

21. D

Factor out each of the given possibilities.
The factors of 10 are 2×5.
The factors of 45 are $3 \times 3 \times 5$.
The factors of 50 are $2 \times 5 \times 5$.
The factors of 60 are $2 \times 2 \times 3 \times 5$.
The factors of 90 are $2 \times 3 \times 3 \times 5$.

22. C

Translate the sentence into a mathematical equation, then solve.

$$x - 5 = \frac{1}{3}x$$

$$x - \frac{1}{3}x = 5$$

$$\frac{2}{3}x = 5$$

$$x = 5\left(\frac{3}{2}\right) = \frac{15}{2}$$

23. A

$$score = \frac{\# \ correct}{\# \ questions}; \ 72\% = \frac{72}{100} = 0.72$$

$$0.72 = \frac{n}{50}$$

$$n = 0.72 \times 50 = 36$$

24. C

Rearrange the fractions to make it easier to solve by combining fractions with like denominators.

$$\frac{1}{5} - \frac{1}{5} + \frac{2}{7} - \frac{1}{7} - \frac{1}{7} + \frac{3}{4} - \frac{1}{4}$$

The first five fractions equal zero, leaving

$$\frac{3}{4} + \frac{1}{4} = \frac{4}{4} = 1.$$

25. A

The perimeter of a square is $4s$. With side length $= 5$, the perimeter is $4(5) = 20$. The perimeter of a rectangle is $2L + 2W$. With length $= 8$ and width $= 6$, the perimeter is $2(8) + 2(6) = 16 + 12 = 28$. The difference between the perimeters is $28 - 20 = 8$.

SECTION 4: READING COMPREHENSION

Passage 1

1. C

While choice (D) may be a true statement, it is not the reason she tells this to the goat. Choices (A), (B) and (E) are not suggested by the content of the passage.

2. B

While the goat may be angry, choice (D), clumsy, choice (C), or uncomfortable, choice (A), the fox's words are about her opinion of the goat, not the goat's feelings. Choice (E) is not consistent with the goat's situation or the fox's opinion of him.

3. E

While the fox may seem to be helping the goat, she only does this to trick him so that she can get out of the well.

4. A

Nothing in the passage suggests choices (B) or (E). And while the fox does climb, choice (D), she climbs up the goat's back, not up the walls. Choice (C) is incorrect because the fox could not have jumped out without using the goat as a ladder.

5. D

Choices (C) and (E) are incorrect because while they may be inferred from the story, they are not the lessons implied by the fox's words. Choice (B) is incorrect because it is too specific. The problem was not thirst, but acting without thinking. Choice (A) is wrong because it implies the opposite of what the goat did when he jumped into the well.

Passage 2

6. C

Since Demeter is the goddess of the harvest, she oversees crops planted for food. Choices (A), (B) and (E) are contradicted by the passages because Hades is the god of the underworld, and the passage does not state who rules over marriage or humanity. Choice (D) is incorrect, because while the weather affects the growth of crops, Demeter rules the growth of plants, not what causes them to grow or not grow.

7. D

The passage does not say myths always involved gods and goddesses, so choice (B) is incorrect. The passage does not indicate whether choices (A) and (E) are true or false statements. Choice (C) is true of the Demeter myth, but it would not be true of all myths.

8. E

Choices (B) and (D) are true statements about the story, but they are not the reason Demeter causes winter to occur. Choices (A) and (C) might be inferred from the story, but they are not the reason given for winter.

9. E

Choice (B) is incorrect because the passage does not state Zeus' feelings about Hades. Choice (D) is incorrect because if Zeus did not want to upset Hades, he would have given his permission. Choice (A) is incorrect because it was Hades, not Zeus, who wanted Persephone as his wife. Choice (C) is a true statement, but it is not the reason Zeus did not give permission to Hades.

10. D

Although choices (A), (B), (C) and (E) state events that happened in the story, these events are not when, according to the story, Demeter first stopped the growth of crops.

Passage 3

11. B

To complete its journey is to return or go to a farmhouse. Choices (A) and (C) refer to factual elements of the poem, but neither provides compelling reasons for the horse to "think it queer". Choice (E) is not supported by the poem, and neither is choice (D).

12. C

"Sleep" is not only rest but eternal rest in this context. Choice (E) is a good answer about the poem's form but not nearly as strong as choice (C). Choices (B), (D) and (E) are not supported by the poem.

13. B

The woods seem to pull him in because of their beauty and perhaps for a deeper, undisclosed reason. Even though he mentions the owner, choices (A) and (B) are not appropriate. Choices (C) and (D) are not supported by the poem.

14. C

This best explains the difference between the horse and speaker. Choice (A) is the closest of the others, but it is used to point out the essential contrast. Choices (B), (D) and (E) are literary terms one should know, but they do not answer the question properly.

15. C

Downy refers to the soft feathers of a swan, for example. Choice (A) is closest since the flakes are "wind-swept" but this does not refer to the feel of the flakes. Choices (B), (D) and (E) are elements in the poem but do not convey the meaning of downy.

Passage 4

16. C

The answer may be found in lines 4 and 5, which state that Russell wanted *an alternative to his scratched and warped phonograph records*. You may infer that the problem with such records was their poor sound quality.

17. E

Lines 22-23 state that the detector's function is to convert data collected by the laser into music.

18. B

While the paragraph explains the function of semiconductor lasers in reading the information on CDs, it does not say anything about why they were invented.

Passage 5

19. C

The author tells you his reason in the second sentence.

20. A

See the third sentence.

21. E

The fourth sentence gives this detail.

22. A

The sixth sentence tells that the garden led to a forest. The selection says that the garden extended so far that the gardener did not know where it ended, but it does not say that he was unable to care for it because of its size.

23. B

In the last sentence we learn that the forest went down to the sea, and in the trees of the forest at seaside lived a nightingale.

Passage 6

24. C

Read carefully the second sentence of the first paragraph.

25. E

You can infer this answer from the third paragraph in which the author states that "The effects of the processes are neither localized nor brief".

26. B

This answer can be inferred from the whole tone of the selection. None of the other choices can be supported by the selection.

27. A

Nonchalant means casually indifferent. Negligence and ignorance on the part of scientists certainly implies nonchalance.

28. A

Synthetic means not natural or man-made.

Passage 7

29. E

After the teaser in the opening sentence (moments of waiting for what?), the first paragraph details the youth's childhood memory of the circus in town, (E). The circus arrival couldn't be called a turning point in his life it—was simply a fond memory—so (D) is incorrect. (B) is

incorrect because he wasn't planning his day at the circus, he was simply enjoying the day as a spectator. Neither (A) nor (C) are discussed in the first paragraph, so they are incorrect as well.

30. B

This question is a little tricky. The text jumps from one "scene" to another. That is, the quoted exclamation breaks us away from the youth's daydream of the circus and into the reality of his current situation. A fellow soldier has shouted that the enemy is approaching, (B), and we are jolted into the reality of the situation. (D) and (E) wrongly assume that the exclamation is part of the youth's memory, and (A) and (C) are completely unwarranted inferences.

31. C

As we have just seen in the previous question, the youth reminisces in paragraph 1. As we jump to the next paragraph and to the reality of the battle, the men prepare with anticipation. No other answer choice fits.

32. A

Horses are never mentioned here; all the soldiers are on foot.

33. E

Why do soldiers carry a flag? In the same way flags are raised on ships in the ocean, raising a flag on land is meant to represent one's side or country. (B) is tempting, but true only if the enemy wins. (D) makes no sense, since the flag is carried at the front of a charging line of soldiers.

Passage 8

34. A

The first sentence of the text tells us that American cowboys emerged later than Hawaiian ones. This is what (A)

states. (C) contradicts the text, and (B), (D) and (E) present details not discussed in the text.

35. B

Here you have to research which answer choice was not mentioned in the passage. If something leaps out at you immediately, there's a good chance that that is the answer. If not, use process of elimination by looking back at the text. The only answer choice not mentioned is (B).

36. C

Evaluate each Roman numeral one at a time, eliminating answer choices as you go. I is supported directly by lines in the text, so it is correct. We can now eliminate (B) and (D) because they do not contain I. II is also supported in the text, so it, too, is true. That means (A) can be eliminated. Finally, III is not supported by the passage, so it is not true. The answer must therefore be (C).

37. C

The passage discusses how the cowboy came to Hawaii, which is what (C) states. (A), (D) and (E) don't get the focus of the passage right, while (B) focuses too much on one detail. Even though the introduction of horses is mentioned in the text, it isn't the point of the entire passage.

38. B

The author isn't excited or confused, so (A) and (C) are out right away. Biased means prejudiced toward a point of view, and condescending means negative, and the tone was neither one of these things, so (D) and (E) are incorrect, too. His tone is informative and balanced, so (B) is the answer.

39. A

(D) and (B) are almost antonyms of "wrathful". (C) doesn't make sense in

context. (E) is close, but (A) is more accurate. Lines 6-7 say the king felt the need to protect the troublemaking animals from the people. He wouldn't need to protect the animals if the people were just merely enraged, or angry.

40. D

Find the right answer by using the passage to answer the questions asked in the choices. (E) is answered in the article: The Hawaiians found the animals unruly for ruining their crops. (A) is answered in the article: With the help of the vaqueros, the animals were able to become cowboys and control the animals. (B) is answered in the first lines: The author calls Western cowboys icons but wants to clarify that by the time the West's cowboys entered pop culture, the Hawaiians had already had cowboys for decades. (C) is answered by subtracting line 4's year—1792—from line 12's year—1830. (D) cannot be answered using the passage. Kapu laws are mentioned in lines, but the passage doesn't say what they were or how they were used.

SECTION 5: MATHEMATICS ACHIEVEMENT

1. E

With a perimeter of 35 and 5 sides of equal length, the length of one side is $\frac{35}{5}$, or 7.

2. A

There were a total of 33 customers who bought caramel candy. Subtract from these the 4 who bought both and you are left with the 29 who bought only caramel.

3. D

Only factors of 36 (numbers that can be divided evenly into 36) can be the number

of different colors in the bag. Since 5 is not a factor of 36, (D), 5, is the correct choice.

4. D

Since the whole number is less than 14 and also between 12 and 18, it must be between 12 and 14. We can immediately eliminate (C) because we need a whole number. (E) is out, too, because 14 are not "less than 14". (A) and (B) are incorrect because 11 and 12 is not "between 12 and 18". Therefore, the number must be 13, choice (D).

5. B

Soap Operas take up 90 degrees of 360 degrees, one-fourth of the pie chart. So Susan spent about one-fourth of 12, or 3 hours, watching Soap Operas.

6. A

To solve for R, multiply both sides of the equation by 3, hence $R = 36$. Plug 36 for R into the expression $\frac{3}{4} R$, and you find that $\frac{3}{4} R = \frac{3}{4} \times 36 = 27$.

7. A

The fraction $\frac{1}{4}$ has a decimal value of 0.25; thus (B), (D) and (E) can be eliminated. Forty-nine rounded to the nearest ten is 50; indeed, 49 is much closer to 50 than to 40, do (A) is correct.

8. B

There is no calculation necessary on this problem. Three of the five points lie on the horizontal $260,000 line and the only other two points are the identical distance above and below the line, thus $260,000 is the correct answer.

9. C

This problem calls for substitution. $u = 4$ and $v = 5$. Plugging these values in yields

$4 \oslash 5 = 4 - \left(1 - \dfrac{1}{5}\right) = 4 - \dfrac{4}{5} = 3\dfrac{1}{5}$; (C) is correct.

10. B

This problem calls for substitution, $u = a$, $v = 3$, and $a \oslash 3 = 2\dfrac{1}{3}$. Using the definition for the left side of this equation, which is $a \oslash 3$, we have $a - \left(1 - \dfrac{1}{3}\right) = 2\dfrac{1}{3}$; then $a - \dfrac{2}{3} = 2\dfrac{1}{3}$ and $a = 3$.

11. D

Any point on the surface rotates once each day relative to a point in space. Each revolution is an angle of 360°. In one and a half days, one and a half revolutions take place, $360° \times 1.5 = 540°$.

12. B

$\dfrac{3}{7}$, $\dfrac{15}{32}$ and $\dfrac{11}{23}$ are all less than $\dfrac{1}{2}$; $\dfrac{9}{16}$ is larger than $\dfrac{1}{2}$. Compare the size of fractions this way.

$$\dfrac{3}{7} \diagdown\!\!\!\!\diagup \dfrac{15}{32}$$

Because the product of 7 and 15 is larger than the product of 32 and 3, $\dfrac{15}{32}$ will be found to be larger. Using the same method, $\dfrac{5}{32} < \dfrac{11}{23}$.

13. E

If the width is x, the length, which is twice as long, is $3x$. The perimeter is equal to the sum of the four sides: $3x + 3x + x + x = 8x$.

14. B

Use the Pythagorean Theorem $c^2 = a^2 + b^2$ to find the length of the diagonal:
$$c^2 = 1^2 + 1^2$$
$$c^2 = 2$$
$$c = \sqrt{2}$$

15. C

Eight sections, each 3'2" long, is equivalent to $8 \times 38'' = 304''$.

$304'' = 25\dfrac{1}{3}$ feet, therefore three 10-foot sections are needed.

16. C

The width of the shaded area is $\dfrac{1}{4}$ of the width of the square. Therefore, the area of the shaded part is $\dfrac{1}{4}$ the area of the whole square. The unshaded part is three times as large as the shaded part. The ratio of the shaded part to the unshaded, therefore, is 1:3.

17. A

Since distance = rate × time, rate = distance ÷ time. Total distance traveled is 2,400 miles. Total time is 3 hours 40 minutes.

= 2,400 miles ÷ $3\dfrac{2}{3}$ hours

= 654.5 mph. approximately

18. C

This is a simple proportion: $\dfrac{9}{6} = \dfrac{7}{x}$, x is the unknown width. Cross-multiply:
$$9x = 42$$
$$x = \dfrac{14}{3}, \text{ or } 4\dfrac{2}{3}''$$

19. C

Subtract the area of the circle from the area of the square to find the area of just the shaded part.

Note that the diameter of the circle equals the width of the square.

Area of square = $s^2 = 4$ sq. in.

Area of circle = $\pi r^2 = \pi (1)^2 = \pi$ sq. in.

Area of square − Area of circle

= 4 sq. in. − $\dfrac{22}{7}$ sq. in.

= $\dfrac{6}{7}$ sq. in., or $\dfrac{6}{7}$ in.²

20. B

The population would reproduce 6 times in 3 hours. The size then is

$$P = 1 \times 2^6$$
$$= 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$$
$$= 64$$

21. D

The value of z is given to us in terms of y; we need to multiply this value by 4 and add 3. Hence, $4z + 3 = 4(y + 4) + 3 = 4y + 16 + 3 = 4y + 19$, (D).

22. D

Picking numbers for x and y is a foolproof method for solving this problem. Pick a positive fraction for x which is less than 1, such as $\frac{1}{2}$. Then pick a positive value for y which is greater than x, which in this case means that the y that we pick must also be greater than $\frac{1}{2}$. Remember, the question says that y is greater than x and the numbers you pick must always be consistent with the question stem. So let's pick 1 for y. So we're letting x be $\frac{1}{2}$ and y be 1. With these values. (A) is 2, (B) and (C) are both $\frac{1}{2}$, and (D) is -2. Further examining (D). we see that the denominator, $x - y$, has a larger

positive number y subtracted from a smaller positive number x. So $x - y$ will always be negative. Therefore $\frac{1}{x - y}$ will also always be negative.

23. A

If 4 people can sit at each of x tables and 8 people can sit at each of y tables, then the maximum number of people that may be seated is $4x + 8y$.

24. C

Draw 3 squares: big, bigger, and biggest. Let the side of the middle fabric piece be 9. The side of the largest fabric piece must be two times this, or 18. Likewise, the side of the smallest square piece must be 3. The area of the largest piece is $18 \times 18 = 324$ and the area of the smallest piece is 9. Now determine the number of times that 9 goes into 324. $\frac{324}{9} = 36$.

25. B

Begin by determining how many gallons of gas it takes to make the 30 trips: $\frac{3}{4} \times 30 = \frac{45}{2} = 22.5$ gallons. If there are 9 gallons in a tank. Mr. Dali will need $\frac{22.5}{9} = 2.5$ tanks of gas.