ANSWER SHEET FOR PRACTICE TEST 1

Name: _____

Date: _____ / _____ / _____

School: _____

Class: _____

Start with number 1 for each new section. If a section has fewer questions than answer spaces, leave the extra answer spaces blank.

PART 1

1 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	20 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	39 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	58 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃
2 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	21 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	40 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	59 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃
3 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	22 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	41 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	60 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃
4 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	23 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	42 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	61 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃
5 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	24 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	43 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	62 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃
6 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	25 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	44 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	63 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃
7 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	26 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	45 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	64 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃
8 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	27 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	46 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	65 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃
9 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	28 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	47 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	66 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃
10 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	29 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	48 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	67 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃
11 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	30 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	49 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	68 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃
12 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	31 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	50 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	69 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃
13 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	32 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	51 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	70 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃
14 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	33 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	52 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	71 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃
15 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	34 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	53 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	72 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃
16 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	35 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	54 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	73 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃
17 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	36 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	55 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	74 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃
18 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	37 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	56 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	75 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃
19 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	38 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	57 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	76 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃

PART 2

1 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	16 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	31 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	46 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃
2 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	17 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	32 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	47 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃
3 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	18 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	33 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	48 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃
4 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	19 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	34 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	49 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃
5 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	20 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	35 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	50 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃
6 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	21 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	36 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	51 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃
7 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	22 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	37 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	52 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃
8 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	23 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	38 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	53 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃
9 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	24 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	39 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	54 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃
10 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	25 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	40 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	55 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃
11 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	26 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	41 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	56 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃
12 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	27 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	42 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	57 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃
13 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	28 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	43 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	58 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃
14 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	29 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	44 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	59 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃
15 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	30 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	45 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	60 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃

BE SURE TO ERASE ANY ERRORS OR STRAY MARKS COMPLETELY.

DO NOT MARK IN THIS AREA

⊂ ⊃ ⊂ ⊃ ⊂ ⊃ ⊂ ⊃ ⊂ ⊃ ⊂ ⊃ ⊂ ⊃ ⊂ ⊃ ⊂ ⊃ ⊂ ⊃ ⊂ ⊃ ⊂ ⊃ ⊂ ⊃ ⊂ ⊃ ⊂ ⊃ ⊂ ⊃ ⊂ ⊃ ⊂ ⊃

1

Start with number 1 for each new section. If a section has fewer questions than answer spaces, leave the extra answer spaces blank.

PART 3

1 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	11 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	21 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	31 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃
2 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	12 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	22 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	32 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃
3 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	13 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	23 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	33 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃
4 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	14 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	24 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	34 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃
5 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	15 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	25 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	35 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃
6 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	16 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	26 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	36 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃
7 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	17 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	27 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	37 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃
8 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	18 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	28 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	38 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃
9 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	19 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	29 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	39 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃
10 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	20 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	30 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	40 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃

PART 4

1 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	11 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	21 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	31 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃
2 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	12 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	22 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	32 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃
3 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	13 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	23 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	33 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃
4 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	14 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	24 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	34 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃
5 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	15 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	25 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	35 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃
6 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	16 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	26 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	36 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃
7 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	17 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	27 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	37 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃
8 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	18 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	28 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	38 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃
9 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	19 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	29 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃	39 ⊂A⊃ ⊂B⊃ ⊂C⊃ ⊂D⊃ ⊂E⊃
10 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	20 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	30 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃	40 ⊂F⊃ ⊂G⊃ ⊂H⊃ ⊂J⊃ ⊂K⊃

BE SURE TO ERASE ANY ERRORS OR STRAY MARKS COMPLETELY.

Practice Test

1

English

75 Questions ■ Time—45 Minutes

Directions: This test consists of five passages in which particular words or phrases are underlined and numbered. Alongside the passage, you will see alternative words and phrases that could be substituted for the underlined part. Select the alternative that expresses the idea most clearly and correctly or that best fits the style and tone of the entire passage. If the original version is best, select "No Change."

The test also includes questions about entire paragraphs and the passage as a whole. These questions are identified by a number in a box.

After you select the correct answer for each question, on your answer sheet, mark the oval corresponding to the correct answer.

Essay I

The Girls Choir of Harlem

It is rare to hear of choirs composed of just girls.
_____
1
In fact, for every girls' choir in the United States,

there are ten choirs that are boys' or mixed. But,
_____
2
in 1977, the Girls Choir of Harlem was founded

to complement the already existing and justly
_____
3
renowned Boys Choir.

To this day, the Boys Choir of Harlem has

always shadowed the Girls Choir. It had been
_____
4
around longer since 1968 and has received the
_____
5
attention needed to gain funding and perfor-

mance opportunities. The boys have appeared

in some of the world's most prestigious musical

settings. Performing a sunrise concert for the
_____
6
Pope on the Great Lawn in New York's Central

Park, and they have traveled to Washington,

D.C. where in front of the reflecting pool they sung in front of the Washington monu-

ment.

[8] During the 1980s, when funds dried up, the Girls Choir temporarily disbanded. However, in 1989, the choir reassembled, and in November of 1997, they made their debut at Alice Tully Hall at Lincoln Center, performing music by Schumann and Pergolesi toward the audience of dignitaries, including the mayor's wife and thousands of music lovers.

Giving kids from broken families and poverty-stricken homes new confidence and hope for their future, the Boys Choir of Harlem acts as a haven for inner-city children. The boys in the choir still attend the Choir Academy. The 500-student public school strongly emphasizes singing. [12] It's a fine learning environment that has given the girls ambitions most of them never before considered. The choir members speak confidently of someday becoming

lawyers, doctors, and politicians—jobs appearing out of reach to them.

Since the Girls Choir of Harlem has received some of the recognition that the boys have long enjoyed, perhaps corporations and wealthy individuals will be motivated to give generously to bring the choir back and ensure it will never again be canceled for lack of money.

1. **A.** NO CHANGE
   B. only just girls.
   C. girls alone.
   D. girls and no boys.

2. **F.** NO CHANGE
   G. ten are either boys' or mixed choirs.
   H. each of ten choirs are either boys' or mixed.
   J. there are ten that are either boys' or mixed choirs.

3. **A.** NO CHANGE
   B. what already existed
   C. the existing
   D. already existing

4. **F.** NO CHANGE
   G. was
   H. has been
   J. being

5. **A.** NO CHANGE
   B. longer, since 1968 and
   C. longer since 1968, and
   D. longer (since 1968) and

6. F. NO CHANGE
   G. They have performed
   H. A performance of
   J. The choir performs

7. A. NO CHANGE
   B. they sung in front of the reflecting pool
   C. before the reflecting pool they sung
   D. they sung at the reflecting pool

8. Which of the following sentences provides the most effective transition from the previous paragraph to this one?
   F. Such glorious moments eluded their female counterparts, at least at first.
   G. The Boys Choir and Girls Choir both have performed mainly in the Northeastern part of the U.S.
   H. The Girls Choir, though not so experienced as the Boys Choir, is considered equally talented.
   J. The Boys Choir was able to attract more funding than the Girls Choir.

9. A. NO CHANGE
   B. before an
   C. in front of the
   D. at an

10. F. NO CHANGE
    G. wife, and
    H. wife as well as
    J. wife with

11. A. NO CHANGE
    B. They give
    C. By giving
    D. As they give

12. Which of the following sentences, if inserted at this point in the essay, would be most logical and appropriate?
    F. Nevertheless, it provides a well-rounded education that helps prepare students for a variety of careers.
    G. Classes in vocal technique, sight reading, and even music theory are all part of the regular curriculum.
    H. The student body is carefully selected from a much larger pool of applicants.
    J. Students are admitted based on financial need as well as their musical abilities, especially their singing ability.

13. A. NO CHANGE
    B. appeared
    C. that once appeared
    D. that would have appeared

14. F. NO CHANGE
    G. close its doors
    H. stop what they do
    J. go silent

Item 15 poses a question about the essay as a whole.

15. Suppose the writer had been assigned to write an essay describing the musical achievements of the Girls Choir of Harlem. Would this essay successfully fulfill the assignment?

   A. Yes, because the essay makes it clear that the girls in the choir are talented performers.
   B. Yes, because the concert at Alice Tully Hall is explained in some detail.
   C. No, because the music performed by the choir is scarcely discussed in the essay.
   D. No, because the essay discusses the Boys Choir as extensively as the Girls Choir.

Essay II

[*The following paragraphs may or may not be arranged in the best possible order. The last item will ask you to choose the most effective order for the paragraphs as numbered.*]

Tunnel Vision: The Bane of Business

[1]

Sometimes a business leader stumbles into a kind of trap by waiting <u>and seeing</u> what new

           16

technologies develop instead of anticipating

<u>them</u>: trading time for the prospect of more

17

information and a decrease in uncertainty.

Sometimes the leader is simply so afraid to lose

<u>that he or she is</u> incapable of the bold action

       18

required for success. Regardless of the reason for inaction, the leader is operating with limited vision, and the company suffers as a result.

[2]

By the early 1980s, Wang Corporation had developed the preeminent office automation capability in the world. <u>In many offices,</u> the

           19

name "Wang" had become synonymous with "office automation." <u>Having had gained</u> a

           20

reputation for quality and with proprietary hardware and software that guaranteed the uniqueness of its product, Wang had built a market position <u>that seemingly was</u> unassail-

         21

able. <u>Yet, in less than a decade,</u> Wang faded

         22

<u>to near obscurity.</u>

   22

[3]

In place of Wang's specialized computer systems, versatile personal computers linked together in networks <u>had become</u> the dominant

         23

office tools. The new personal computers first transformed the market for office automation networks then wiping out the old market. Wang shrank dramatically, surviving only

by transforming itself—exploiting its software
                    24
and engineering strengths in completely

different ways.

[4]
Wang had seen itself as a special kind of

computer company, one that used large
                     25
machines to serve entire companies. Its excel-
                 25
lence and leadership in innovation was highly

respected, and it was important to Wang

not to slip up. That view led Wang to continue
     26
with its familiar business until it was too late. It

failed to see the opportunity that the personal

computer presented. Eventually, Wang did

attempt to move into personal computers, but

by the time that happened. Wang's opportunity
         27
to move forward was gone. 28

[5]
Businesses don't always get into trouble because

they are badly run or inefficient. Sometimes, a
                                      29
well-managed company fails because its leaders
        29
simply don't understand how the world is chang-

ing around them. What happened to Wang, the

office automation company, is a classic example.

16. **F.** NO CHANGE
    G. for
    H. on
    J. to see

17. **A.** NO CHANGE
    B. it,
    C. them—
    D. them and

18. **F.** NO CHANGE
    G. that they are
    H. so as to be
    J. that the leaders are

19. **A.** NO CHANGE
    B. In fact, in many offices,
    C. In many offices, however,
    D. Also, in many offices,

20. **F.** NO CHANGE
    G. Gaining
    H. In order to gain
    J. With

21. **A.** NO CHANGE
    B. that seemed
    C. that was seeming
    D. seemingly

22. Which of the following courses of action
    involving the underlined sentence would
    organize the information in Paragraphs 2
    and 3 in the most logical manner?

    F. NO CHANGE
    G. Start a new paragraph with the
    sentence, and omit the paragraph
    break after the sentence.
    H. Move the sentence to the end of
    Paragraph 3.
    J. Omit the sentence.

23. **A.** NO CHANGE
    B. will become
    C. were to become
    D. soon became

24. **F.** NO CHANGE
    G. by its transformation
    H. by means of transforming
    J. to transform itself

25. **A.** NO CHANGE
    B. a company that used large machines to serve entire companies
    C. whose machines served entire companies because of their large size
    D. using large machines allowing it to serve entire companies

26. **F.** NO CHANGE
    G. to not lose it
    H. to maintain that position
    J. to avoid slip ups

27. **A.** NO CHANGE
    B. it was too late;
    C. by that time
    D. when time ran out

28. Which of the following sentences, if inserted at this point in the essay, would be most relevant and effective?

    F. Wang had been badly outmaneuvered and was left essentially with no market.
    G. The company failed to foresee the day that personal computers would appear on millions of desktops.
    H. Ultimate responsibility for this lack of foresight rested on the shoulders of the company's leaders.
    J. Apparently, Wang was not the excellent computer company everyone in the computer industry had always assumed it was.

29. **A.** NO CHANGE
    B. A well-managed company might fail
    C. When a well-managed company fails, it's
    D. A company that is well-managed fails

Item 30 poses a question about the essay as a whole.

30. Which of the following proposals for the order of the essay's paragraphs, if implemented, would provide the most logical and effective beginning and ending for the essay?

    F. NO CHANGE (Don't make any changes in the sequence of paragraphs.)
    G. Move Paragraph 5 to the beginning of the essay.
    H. Move Paragraph 1 to the end of the essay.
    J. Move Paragraph 5 to the beginning of the essay, and move Paragraph 1 to the end of the essay.

Essay III

An Oboist's Quest

[1]

I started playing the oboe because I heard it was a challenging instrument. That was four years ago, and I've enjoyed learning to play the oboe like I expected. However, it was not until
    31
recently that I realized what an oboist's real challenge is: finding good oboe reeds.
    32

[2]

Though the reed is a small part of the instrument, mainly it is what the quality of the oboe's
                                33
sound is determined by. Professional oboists
            33
make their own reeds. Students like me must
              34
buy reeds from either their teachers or from
             35
mail-order companies.

[3]

My troubles began when my teacher stopped

making reeds, sending all of her students on a

wild goose chase for the perfect reed. The

problem is there's no such thing as a perfect
        36
reed, though oboists like to daydream about it.

There is also no such thing as a perfect reed

supplier. Reed makers are much in demand, and

the reeds are often very expensive. 37 What's

more, the reed makers tend to take their time in

sending reeds to you. For example, I usually
                    38
have to wait three to six weeks after they've

received my check in the mail. This wouldn't be

a problem if I always ordered my reeds well

before the time I need it, but oboe reeds are
                 39
temperamental and often crack or break

without warning. Thus, I need to have several

back-up reeds available at all times.

[4]

I first tried buying reeds from a reed maker in

Massachusetts. They were pretty good at first,

but they became progressively lower and lower
                                      40
in quality the longer I bought them from him. It

got to the point where none of the reeds he

supplied worked, so I had to move on.

[5]

My next source was a company in California.

However, they're reeds sounded like ducks
          41
quacking, so I dropped that source from my

list. Desperate, the next person I called was an
                            42
oboist friend of my parents. She helped me fix a
          42
few salvageable reeds I owned, and soon I had

several that played in tune and that created a

good tone. It seemed my reed troubles were

over. However, within two weeks, those

precious reeds were all played out, and I

needed more.

[6]

Recently, however, a friend recommended a
                          43
reed maker from New York City who made

reeds that, according to him, were rather good.
             44
I called him immediately, and he asked me

questions about my playing so that he could

cater to my oboe needs. He promised to send

out a supply of reeds within a week. Imagine

my disappointment when the reeds he sent

turned out to be poorly made, with unstable

tones and a thin, unpleasant sound. 45

31. A. NO CHANGE
    B. as
    C. as much as I
    D. to the degree in which I

32. F. NO CHANGE
    G. is—it's finding
    H is which is finding
    J. is finding

33. A. NO CHANGE
    B. it is mainly what determines the quality of the oboe's sound
    C. it is the main component of the oboe that determines the quality of its sound
    D. mainly the quality of the oboe's sound is determined by the reed

34. F. NO CHANGE
    G. reeds, but
    H. reeds, so
    J. reeds. And, students

35. A. NO CHANGE
    B. from their teachers or
    C. either from their teachers or
    D. either from their teachers or from

36. F. NO CHANGE
    G. is that there's
    H. was there's
    J. is, there's

37. At this point, the writer wants to provide an additional remark about the expense of oboe reeds. Which of the following sentences would be most relevant and most consistent with the information in the paragraph as a whole?

    A. In addition, if you purchase a reed by mail order, you're charged a shipping fee, making the total expense even greater.
    B. In my opinion, reed makers often charge twice what I consider a fair price for an oboe reed.
    C. Students, most of whom are on a limited budget, find it difficult to afford expensive reeds.
    D. However, since professional reed makers produce the best possible reeds, the high price is well worth it.

38. F. NO CHANGE
    G. Typically,
    H. In fact,
    J. OMIT the underlined portion.

39. A. NO CHANGE
   B. need them,
   C. plan to use it,
   D. need,

40. F. NO CHANGE
   G. less and less
   H. poor
   J. lower

41. A. NO CHANGE
   B. it's
   C. their
   D. its

42. F. NO CHANGE
   G. I next called an oboist friend of my parents
   H. an oboist friend of my parents was the next person I called
   J. I called a person next who was an oboist friend of my parents

43. Among the following alternatives involving the underlined portion, which provides the most logical and effective transition from Paragraph 5 to Paragraph 6?

   A. NO CHANGE
   B. However,
   C. Recently,
   D. Also,

44. F. NO CHANGE
   G. he claimed
   H. my friend told me
   J. according to my friend

Item 45 poses a question about the essay as a whole.

45. Which of the following sentences, if inserted at this point, would provide an ending for the essay that best ties together the entire essay?

   A. My search for the perfect reed continues and may never come to an end until I learn to make reeds myself.
   B. With all the oboists in the New York City area, you'd think that this reed maker's product would be far better than it was.
   C. Obviously, I'll never buy another reed from the reed maker that my friend recommended—or from any of the reed makers with whom I've already dealt.
   D. When I first began playing the oboe, I never imagined that finding reeds would be more challenging than actually learning to play the instrument.

Essay IV

The First Thanksgiving: Turkey Day and a Whole Lot More

[1]

Every autumn, when Thanksgiving occurs,
                          _____
                                  46
anxiety and stress levels in millions of American

families rise. It's not an easy job to host friends
                                        _____
                                          47
and relatives from all over the country then
                                _____
                                     48
preparing one of the largest meals of the year.

But when the typical Thanksgiving dinner of

today is compared with the celebration of the

first Thanksgiving, it doesn't seem like such

a feat.

[2]

First, consider the menu. At a typical modern-

day Thanksgiving dinner, there is a roast
                                    _____
                                     49

turkey, baked yams, stuffing, cranberry sauce,

gravy, and some sort of dessert—perhaps ice

cream and either pie or cake. Of course, you

can fix everything yourself from scratch, if you

like; but if you prefer, all the food can be
                        _____
                              50

purchased at a local supermarket. In just one
_____
   50

trip, you have all you need for your dinner.

[3]

(1) Today's menu seems stingy by comparison
                                 _____
                                      51

to the Pilgrims' meal enjoyed on the first
        _____
             52

Thanksgiving in 1621. (2) According to

contemporary records, the list of foods included

five deer; wild turkeys, geese, and duck; eels,

lobsters, clams, and mussels fished from the

ocean; pumpkin; an assortment of biscuits; hoe

and ash cakes; popcorn balls; pudding; berries

of several kinds; plums, cherries, and bogbeans;

beer made from barley; and wine spiked with

brandy. ☐53 (3) Just in case this weren't
                    _____
                         54

enough, the Pilgrims could fill in the corners

with "flint corn," a rock-hard corn ground into

a mush. (4) And once the dinner was served,

the meal lasted not a few hours but rather
               _____
                          55

a few days—and with no football on television
_____
   55

to distract the Pilgrims and their friends from

the serious business of eating.

[4]

☐56 Nowadays, in many households, the whole

family comes for Thanksgiving. Statistics show

that the average Thanksgiving dinner today

boasts twenty-three guests total— no tiny
                    _____
                         57

gathering. Both family and friends are included
          _____
                       58

in this number. At the first Thanksgiving, when
_____
      58

Squanto, the Indian-in-residence, decided to

invite Massasoit, the leader of the Wampanoag

tribe, the Pilgrims weren't expecting him to
       _____
                     59

bring along another ninety Wampanoags
_____
                 59

to a little pot-luck supper. With the Pilgrims,
_____
         59

that made a 140-person guest list. ☐60

46.
F. NO CHANGE
G. when it's Thanksgiving
H. during Thanksgiving
J. whenever Thanksgiving rolls around

47.
A. NO CHANGE
B. hosting
C. as a host to
D. of hosting

48.
F. NO CHANGE
G. country. Then
H. country; then
J. country, and then

49.
A. NO CHANGE
B. it's common to eat
C. you'll dine on
D. the menu consists of

50.
F. NO CHANGE
G. you can purchase all the food
H. all the food is purchasable
J. the food you need you can purchase

51.
A. NO CHANGE
B. when it is being compared
C. comparing it
D. OMIT the underlined portion.

52.
F. NO CHANGE
G. Pilgrim's meal
H. meal the Pilgrims
J. Pilgrims' meal that they

53. Is the repeated use of a semicolon in sentence 2 correct and appropriate?

A. Yes, because the sentence lists more than three distinct items of food.
B. Yes, because the sentence lists different categories as well as specific category items.
C. No, because the resulting sentence is so long that it is not easily understood.
D. No, because a semicolon should be used only to separate clauses that can stand alone as complete sentences.

54.
F. NO CHANGE
G. If
H. As if
J. In the case that

55.
A. NO CHANGE
B. so many hours that it lasted for a few days
C. not just a few hours but rather a few days
D. a few days and not a few hours

56. Which of the following sentences, if inserted at the beginning of Paragraph 4, would provide the best transition from Paragraph 3?

F. With none of our modern conveniences, such as gas and electric stoves, the Pilgrims needed far more time to prepare Thanksgiving dinner.
G. With so much food and such an extensive menu, it made sense for a Pilgrim host to invite as many guests as possible for Thanksgiving dinner.
H. At a Pilgrim's typical Thanksgiving dinner, the number of guests was often very large.
J. The other major difference between our Thanksgiving and the Pilgrims' Thanksgiving involves the guest list.

57.
  A. NO CHANGE
  B. guests in total
  C. guests
  D. guests altogether

58. Which of the following proposals for the underlined sentence would be most appropriate in the context of Paragraph 4 as a whole?

  F. Revise the sentence as follows: *This number includes friends as well as family.*
  G. Replace the sentence with the following: *As it turns out, this number is actually comparatively low.*
  H. Move the sentence to the end of Paragraph 4.
  J. Delete the sentence. (Do not replace it with any other sentence.)

59.
  A. NO CHANGE
  B. the Pilgrims weren't expecting him to bring along to a little pot-luck supper another ninety Wampanoags
  C. to a little pot-luck supper, the Pilgrims weren't expecting him to bring along another ninety Wampanoags
  D. he wasn't expected by the Pilgrims to bring another ninety Wampanoags to a little pot-luck supper

Item 60 poses a question about the essay as a whole.

60. The writer wants to add a sentence that links the essay's opening and ending. If inserted at the end of the essay, which of the following sentences best achieves this objective?

  F. So, instead of complaining about your duties as a Thanksgiving host, be thankful you aren't hosting the first Thanksgiving.
  G. As it turns out, then, the dinner menu for the first Thanksgiving was not too extensive after all.
  H. Compared to today's Thanksgiving hosts, the Pilgrims certainly had their hands full with the large number of guests for their first Thanksgiving.
  J. The unexpected turnout for the first Thanksgiving makes today's typical Thanksgiving dinner look like an intimate gathering.

Essay V

A People's Art, for Good and Ill

[1]

During movies early years, from about 1910 to
        61

1940, the greatness of film as an art form is in
                   62

its own ingenuity and invention. And this

greatness was not lost on the general public, as

the numbers of avid moviegoers grew and grew

during this time period. Between 1920
                63

and 1930, a generation of filmmakers emerged
              63

who were not failed novelists or unsuccessful playwrights but rather moviemakers—through and through. Their essential vision belonged to no other medium with the exception of

$\overline{64}$

the cinema, and this is what made the early

$\overline{64}$

days of filmmaking so vital and exciting.

[2]

$\boxed{65}$ Their public was a universal audience of ordinary people, spread across the world. Like the first dramas of Shakespeare, their art was not a product for the palace or the mansion, but rather for the common playhouse where

$\overline{66}$

working people sat shoulder to shoulder with the middle class and the well-to-do. This is what gave the early movie makers the strength and freshness still perceived by us in their art.

$\overline{67}$

[3]

(1) Today, movies are more popular than ever, and box-office receipts for the great

$\overline{68}$

international hit films running into hundreds of millions of dollars. (2) Movies are becoming more and more conventional, unimaginative, and staler.(3) However, there is a price to be

$\overline{69}$

paid for this democratic appeal to the common person. (4) The freshness of the early movie makers has been lost. $\boxed{70}$

[4]

The artist who serves an elite audience has a

$\overline{71}$

known patron, or group of patrons, to satisfy. If he is strong enough, he can, like the painters of the Renaissance, mold their taste in the image of his own. This is true of the greater and

$\overline{72}$

more resolute artists of the cinema, from Chaplin in the 1920s to Bergman and Anto-nioni in the 1960s. $\boxed{73}$ The larger an audience

$\overline{74}$

and the more costly the movies are to produce, the greater become the pressures brought to bear on the less conventional creator to make his work conform to the pattern of the more conventional creator.

61. **A.** NO CHANGE
    B. During movies' early years,
    C. During movie's early years,
    D. During the early years of movies,

62. **F.** NO CHANGE
    G. was
    H. lay in
    J. is

63. **A.** NO CHANGE
 B. Between 1920 and 1930 emerged a generation of filmmakers
 C. Between 1920 and 1930, the emergence of a generation of filmmakers
 D. A generation of filmmakers emerged between 1920 and 1930

64. **F.** NO CHANGE
 G. other medium but the cinema,
 H. medium with the exception of the cinema,
 J. medium other than the cinema,

65. Which of the following clauses, if added to the beginning of the first sentence in Paragraph 2, would provide the most effective transition from Paragraph 1 to Paragraph 2?

 A. First of all,
 B. However,
 C. Furthermore,
 D. Without a doubt,

66. **F.** NO CHANGE
 G. but of
 H. but instead for
 J. it was for

67. **A.** NO CHANGE
 B. we still perceive in their art
 C. still perceived in their art today
 D. still perceived in their art by us

68. **F.** NO CHANGE
 G. ever;
 H. ever, but
 J. ever, with

69. **A.** NO CHANGE
 B. more stale
 C. stale
 D. even stale

70. Which of the following is the best order for the sentences in Paragraph 3?

 F. 2, 1, 4, 3
 G. 1, 2, 3, 4
 H. 3, 1, 4, 2
 J. 1, 3, 2, 4

71. **A.** NO CHANGE
 B. has only
 C. has had
 D. only has

72. **F.** NO CHANGE
 G. This can also be
 H. Such an ability is
 J. This image is

73. An editor has suggested that the writer insert a sentence at this point in order to provide a logical and effective connection between the sentence that would precede it and the sentence that would follow it. Which of the following sentences would best accomplish this objective?

 A. These aren't the only cinematic artists who have been able to accomplish this; but, they are probably the most notable ones.
 B. All three of these artists were able to satisfy the quirky tastes of their patrons while satisfying their own creative urges as well.
 C. But, these artists were interested mainly in achieving artistic excellence, not in appealing to a mass audience.
 D. The films of these artists were eventually seen by millions of people worldwide.

74. **F.** NO CHANGE
 G. For large audiences
 H. If the audiences are large
 J. A larger audience

Item 75 poses a question about the essay as a whole.

75. An editor has commented that the writer has not ended the essay effectively. Considering the essay's overall structure and flow of information, which of the following would be the most effective course of action?

A. Switch the position of Paragraph 3 with the position of Paragraph 4.

B. Delete the sentence that is currently the last sentence of the essay.

C. Add the following sentence to the end of the essay: *The early years of moviemaking were indeed the best—for both the makers of films and their audiences.*

D. Replace the final sentence with the following: *Nevertheless, some of today's filmmakers have managed to produce movies with great mass appeal and that are highly creative.*

STOP

Math

60 Questions ■ Time—60 Minutes

Directions: Solve each problem; then, on your answer sheet, mark the oval corresponding to the correct answer.

Be careful not to spend too much time on any one question. Instead, solve as many problems as possible, and then use the remaining time to return to those questions you were unable to answer at first.

You may use a calculator on any problem in this test. However, some problems can best be solved without use of a calculator.

Note: Unless otherwise stated, you can assume that:

1. Diagrams that accompany problems are not necessarily drawn to scale.
2. All figures lie in the same plane.
3. The word "line" refers to a straight line (and lines that appear straight are straight).
4. The word "average" refers to arithmetic mean.

1. The number 40.5 is 1,000 times greater than which of the following numbers?
    - **A.** 0.405
    - **B.** 0.0405
    - **C.** 0.0450
    - **D.** 0.00405
    - **E.** 0.000405

2. Lyle's current age is 23 years, and Melanie's current age is 15 years. How many years ago was Lyle's age twice Melanie's age?
    - **F.** 16
    - **G.** 9
    - **H.** 8
    - **J.** 7
    - **K.** 5

3. If x is a real number, and if $x^3 = 100$, then x lies between which two consecutive integers?

   A. 1 and 2
   B. 2 and 3
   C. 3 and 4
   D. 4 and 5
   E. 5 and 6

4. In the standard (x,y) coordinate plane below, which point has the coordinates $(4,-5)$?
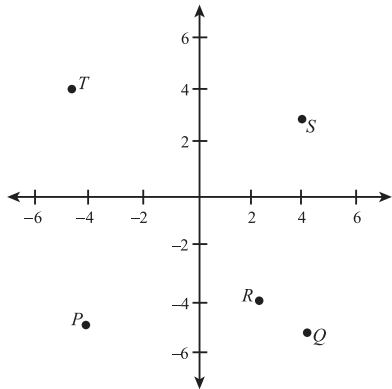
   F. P
   G. Q
   H. R
   J. S
   K. T

5. A certain zoo charges exactly twice as much for an adult admission ticket as for a child's admission ticket. If the total admission price for the family of two adults and two children is $12.60, what is the price of a child's ticket?

   A. $1.60
   B. $2.10
   C. $3.20
   D. $3.30
   E. $4.20

6. One marble is to be drawn randomly from a bag that contains three red marbles, two blue marbles, and one green marble. What is the probability of drawing a blue marble?

   F. $\dfrac{1}{6}$

   G. $\dfrac{1}{5}$

   H. $\dfrac{2}{7}$

   J. $\dfrac{1}{3}$

   K. $\dfrac{2}{5}$

7. Point A bisects line segment $\overline{BC}$, and point D bisects line segment $\overline{BA}$. Which of the following congruencies holds?

   A. $\overline{DC} \cong \overline{CB}$
   B. $\overline{BA} \cong \overline{CB}$
   C. $\overline{DC} \cong \overline{DA}$
   D. $\overline{AD} \cong \overline{DB}$
   E. $\overline{CA} \cong \overline{BC}$

8. If $\dfrac{2y}{9} = \dfrac{y-1}{3}$, then $y =$

   F. $\dfrac{1}{3}$

   G. $\dfrac{3}{5}$

   H. $\dfrac{4}{9}$

   J. $\dfrac{9}{4}$

   K. 3

9. $4\frac{1}{2} + 3\frac{3}{4} - 2\frac{2}{5} =$

A. $\dfrac{57}{10}$

B. $\dfrac{231}{40}$

C. $\dfrac{117}{20}$

D. $\dfrac{23}{4}$

E. $\dfrac{29}{5}$

10. If $a = 3$, $b = -3$, and $c = \dfrac{1}{3}$, then $ab^2c =$

F. -27

G. -1

H. 3

J. 9

K. 27

11. M is $P\%$ of what number?

A. $\dfrac{100M}{P}$

B. $\dfrac{100P}{M}$

C. $\dfrac{M}{100P}$

D. $\dfrac{P}{100M}$

E. $\dfrac{MP}{100}$

12. In the figure below, lines a and b are parallel, and lines c and d are parallel. What is the measure of $\angle x$?
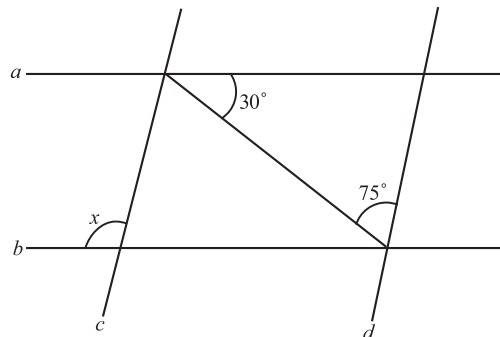
F. $75°$

G. $95°$

H. $100°$

J. $105°$

K. $115°$

13. A solution of 60 ounces of sugar and water is 20% sugar. If you add x ounces of water to make a solution that is 5% sugar, which of the following represents the amount of sugar in the solution after adding water?

A. $60 - 40x$

B. $0.05(60x - 20)$

C. $0.05(60 + x)$

D. $0.20(60 + x)$

E. $60(0.05 + x)$

14. In the standard (x,y) coordinate plane, lines a and b intersect at point $(5,-2)$ and lines b and c intersect at point $(-3,3)$. What is the slope of line b?

  F. $\dfrac{1}{2}$

  G. $-\dfrac{5}{2}$

  H. $-\dfrac{2}{5}$

  J. $-\dfrac{5}{8}$

  K. It cannot be determined from the information given.

15. In the figure below, M is the midpoint of $\overline{RS}$. What is the area of $\triangle MOP$?
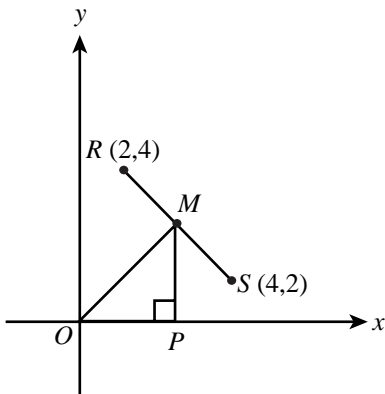
  A. 4.5

  B. 4

  C. 3.5

  D. 3

  E. $2\sqrt{2}$

16. A photographic negative measures $1\dfrac{7}{8}$ inches by $2\dfrac{1}{2}$ inches. If the longer side of the printed picture is to be 4 inches, what will be the length of the shorter side of the printed picture?

  F. $3\dfrac{1}{8}$ inches

  G. 3 inches

  H. $2\dfrac{3}{4}$ inches

  J. $2\dfrac{1}{2}$ inches

  K. $2\dfrac{3}{8}$ inches

17. Which of the following is the equation of a straight line that has y-intercept 3 and is perpendicular to the line $4x - 2y = 6$?

  A. $2y + 3x = -3$
  B. $y + 3x = 2$
  C. $2y - x = 6$
  D. $y - 2x = 4$
  E. $2y + x = 6$

18. Of 60 pairs of socks in a drawer, 40% are blue, while the remaining socks are all gray. If 4 blue socks are removed from the drawer, what is the ratio of gray socks to blue socks?

  F. 1:2
  G. 5:9
  H. 3:5
  J. 9:5
  K. 2:1

19. On the (x,y) coordinate plane, what is the distance from the point defined by $(5,4)$ and the point defined by $(1,-2)$?

    A. $2\sqrt{5}$

    B. $4\sqrt{3}$

    C. $5\sqrt{2}$

    D. $2\sqrt{13}$

    E. $3\sqrt{6}$

20. Which of the following is NOT a member of the solution set for the equation $2x(3x - 1)(2x - 2)(x - 3) = 0$?

    F. 3

    G. 2

    H. 1

    J. $\dfrac{1}{3}$

    K. 0

21. Which of the following best describes the graph on the number line below?
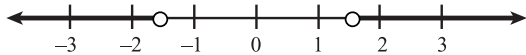
    A. $|x| > 1.5$

    B. $|x| < -1.5$

    C. $-1.5 < |x| < 1.5$

    D. $|x| > -1.5$

    E. $|x| < 1.5$

22. $\sqrt{\dfrac{y^2}{2} - \dfrac{y^2}{18}} =$

    F. 0

    G. $\dfrac{10y}{3}$

    H. $\dfrac{2y}{3}$

    J. $\dfrac{y\sqrt{3}}{6}$

    K. $\dfrac{y\sqrt{5}}{3}$

23. If $x + y = a$, and if $x - y = b$, then $x =$

    A. $\dfrac{1}{2}(a + b)$

    B. $a + b$

    C. $a - b$

    D. $\dfrac{1}{2}ab$

    E. $\dfrac{1}{2}(a - b)$

24. If the equation $x^2 + 8x + s = 0$ has only one solution, then $s =$

    F. -4

    G. 0

    H. 4

    J. 8

    K. 16

25. On the xy-coordinate plane, a point defined by the (x,y) pair $(m,2)$ lies on a circle with center $(3,-1)$ and radius 5. Which of the following is a possible value of m?

    A. 8

    B. 6

    C. -1

    D. -2

    E. -7

26. If the sides of a triangle are 8, 15, and 17 units long, what is the measure of the angle formed by the two shortest sides?

    F. 30°
    G. 45°
    H. 60°
    J. 75°
    K. 90°

27. How many different ways can you add four positive odd integers together for a sum of 10, without considering the sequence of the integers?

    A. Five
    B. Four
    C. Three
    D. Two
    E. One

28. The figure below shows right triangle PQR. What is the length of $\overline{QR}$?
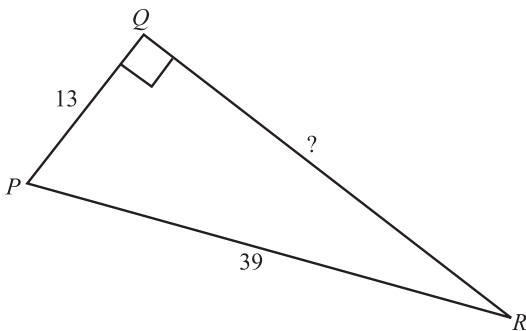
    F. $13\sqrt{3}$
    G. $\dfrac{39\sqrt{2}}{2}$
    H. 26
    J. 30
    K. $26\sqrt{2}$

29. The average of five numbers is A. If a sixth number n is added, which of the following represents the average of all six numbers?

    A. $\dfrac{6A - n}{5}$
    B. $6A$
    C. $A + \dfrac{n}{6}$
    D. $\dfrac{5A + n}{6}$
    E. $\dfrac{A \times n}{6}$

30. If two sides of a triangle are 6.5 and 8.5 inches long, which of the following cannot be the length of the third side?

    F. 15 inches
    G. 12 inches
    H. 9.5 inches
    J. 6.5 inches
    K. 5.5 inches

31. Referring to the graph below, what was the greatest dollar amount by which the share price of ABC common stock exceeded the share price of XYZ common stock during Year X?

PRICE OF COMMON STOCK OF
XYZ CORP. AND ABC CORP.
(YEAR X)

QUARTER

●———● XYZ stock
●----● ABC stock
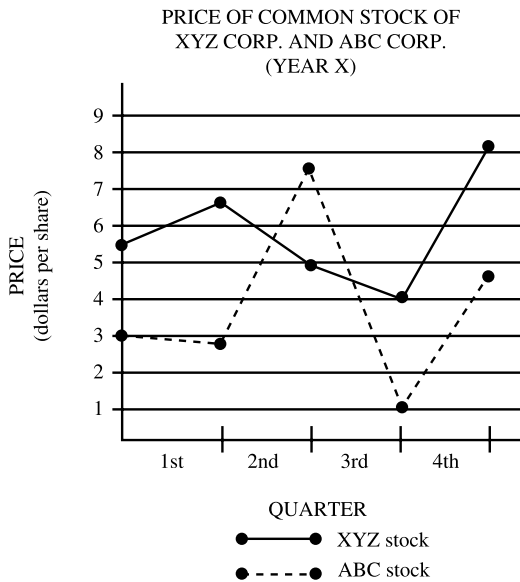
A. $1.80
B. $2.60
C. $3.00
D. $3.60
E. It cannot be determined from the information given.

32. If x and y are negative integers, and if $x - y = 1$, what is the least possible value of xy?

F. 2
G. 1
H. 0
J. -1
K. -2

33. If $\sqrt{4x} = \sqrt{y}$, then in terms of y, $x =$

A. $2y$

B. $\dfrac{\sqrt{y}}{2}$

C. $\sqrt{y}$

D. y^2

E. $\dfrac{y}{4}$

34. The distance a moving object travels can be determined as the product of the object's rate of motion (r), or speed, and the amount of time (t) traveling. If a boat travels m miles in 4 hours, then an additional 20 miles in t hours, which of the following represents the boat's average speed, in miles per hour, over the total distance?

F. $\dfrac{t + 4}{m + 20}$

G. $\dfrac{m + 20}{t + 4}$

H. $\dfrac{tm}{20}$

J. $\dfrac{t + 20}{m + 4}$

K. $\dfrac{4tm}{5}$

35. In the figure below, if $\overline{AB} \parallel \overline{DC}$ and $\overline{AD} \parallel \overline{BC}$, what is the measure of $\angle ABD$?
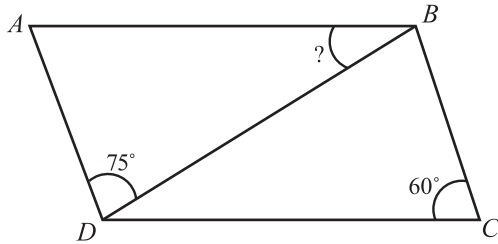
- **A.** 40°
- **B.** 45°
- **C.** 50°
- **D.** 55°
- **E.** 60°

36. What is the value of m in the following system of two equations?

$$4m = 12 - 3n$$

$$\frac{3}{4}n = 3 - m$$

- **F.** -6
- **G.** -3
- **H.** 2
- **J.** 8
- **K.** Any real number

37. If $A = \begin{bmatrix} -3 & 5 \\ 3 & 7 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & 2 \\ -1 & 1 \end{bmatrix}$, then $2A - B =$

- **A.** $\begin{bmatrix} -3 & 12 \\ 5 & 15 \end{bmatrix}$
- **B.** $\begin{bmatrix} -9 & 8 \\ 5 & 13 \end{bmatrix}$
- **C.** $\begin{bmatrix} -9 & 8 \\ 7 & 13 \end{bmatrix}$
- **D.** $\begin{bmatrix} -6 & 3 \\ 4 & 6 \end{bmatrix}$
- **E.** $\begin{bmatrix} -3 & 8 \\ 7 & 13 \end{bmatrix}$

38. In an arithmetic sequence, each successive term is either greater than or less than the preceding term by the same amount. What is the tenth term of the arithmetic sequence 30, 27, 24, . . . ?

- **F.** 10
- **G.** 3
- **H.** 0
- **J.** -3
- **K.** -30

39. If $f(x) = 6^x$ and $g(x) = \log_6 x$, which of the following expressions is equal to $f(2g(M))$?

- **A.** $2M$
- **B.** 6^M
- **C.** M^2
- **D.** M^6
- **E.** 6^{2M}

40. The figure below shows a rectangular solid with the following unit dimensions: $\overline{QR} = 3$, $\overline{QS} = 4$, and $\overline{ST} = 5$. How many units long is $\overline{RT}$?
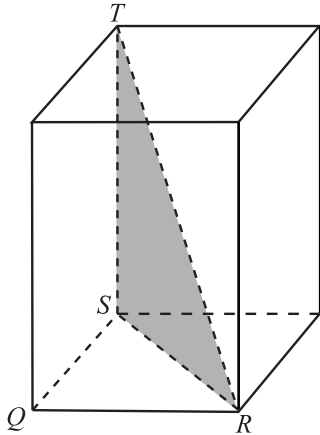
F. $4\sqrt{2}$

G. 6

H. $4\sqrt{3}$

J. 7

K. $5\sqrt{2}$

41. Two competitors battle each other in each match of a tournament with six participants. What is the minimum number of matches that must occur for every competitor to battle every other competitor?

A. 21

B. 18

C. 16

D. 15

E. 12

42. Three carpet pieces—in the shapes of a square, a triangle, and a semicircle—are attached to one another, as shown in the figure below, to cover the floor of a room. If the area of the square is 144 feet and the perimeter of the triangle is 28 feet, what is the perimeter of the room's floor, in feet?
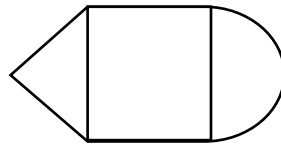
F. $32 + 12\pi$

G. $40 + 6\pi$

H. $34 + 12\pi$

J. $52 + 6\pi$

K. $52 + 12\pi$

43. ΔPQR below has angle measures 90, θ, and β degrees as shown. Which of the following is true for all possible values of θ and β?
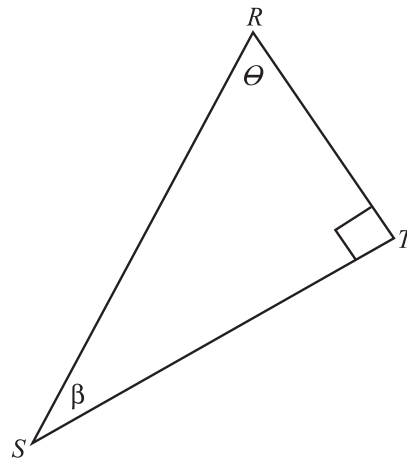
A. $\tan\theta = \tan\beta$

B. $\sin\theta + \cos\beta = 1$

C. $\sin\theta \times \cos\beta = 1$

D. $\tan\theta \times \tan\beta = 1$

E. $\sin\theta \tan\beta = \cos\beta$

44. Two ships leave from the same port at 11:30 a.m. If one sails due east at 24 miles per hour and the other due south at 10 miles per hour, how many miles apart are the ships at 2:30 p.m.?

   F. 45
   G. 62
   H. 68
   J. 78
   K. 84

45. If the circumference of the circle pictured below is 16π units, what is the unit length of $\overline{AC}$?
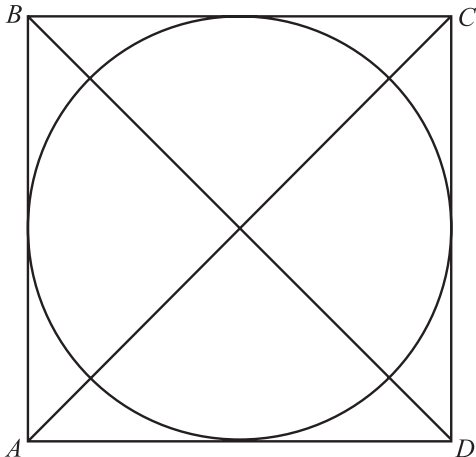
   A. $4\sqrt{2}$
   B. 16
   C. $16\sqrt{2}$
   D. 32
   E. 16π

46. If $\sqrt{3x} = 6i$, then $x =$

   F. 12
   G. 6
   H. 3
   J. 2
   K. -12

47. For all $x > 2$, $\dfrac{x^2 - 4}{x^2 - 2x} =$

   A. $x - \dfrac{4}{x}$
   B. $\dfrac{1}{2x}$
   C. $1 + \dfrac{2}{x}$
   D. $2 - x$
   E. $2x - 1$

48. Events A, B, and C occur every 5 days, 3 days, and 8 days, respectively. What is the number of days after events A, B, and C all occur on the same day that they all occur again for the first time on the same day?

   F. 45
   G. 65
   H. 80
   J. 90
   K. 120

49. If two of the angles of the polygon shown below are congruent, then $x =$
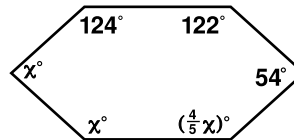
   A. 78
   B. 84
   C. 120
   D. 150
   E. 174

50. If $x^2 + 2 = -4x$, what are the possible values of x?

- **F.** $-4 \pm \sqrt{2}$
- **G.** $-2 \pm \sqrt{2}$
- **H.** $2 \pm \sqrt{2}$
- **J.** $4 \pm \sqrt{2}$
- **K.** $4 \pm 2\sqrt{2}$

51. A certain cube contains 125 cubic inches. What is the surface area, in square inches, of each square face of the cube?

- **A.** 5
- **B.** 10
- **C.** 15
- **D.** 20
- **E.** 25

52. A certain clock runs 48 minutes slow every 12 hours. Four hours after the clock is set correctly, the correct time is 4:00. In how many minutes, to the nearest minute, will the clock show 4:00?

- **F.** 13
- **G.** 14
- **H.** 15
- **J.** 16
- **K.** 17

53. The figure below shows a parabola in the standard (x, y) coordinate plane.
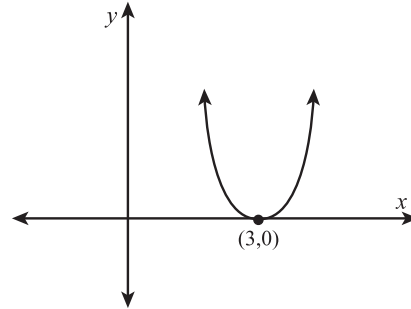
Which of the following equations does the graph best represent?

- **A.** $y = x^2 + 3x + 9$
- **B.** $y = x^2 - 2x + 6$
- **C.** $y = -x^2 + x - 3$
- **D.** $y = x^2 - 6x + 9$
- **E.** $y = x^2 + 2x + 3$

54. The figure below shows a flat picture mat around a square painting. The width of the mat is 1 inch, and the area of the mat is 60 square inches.
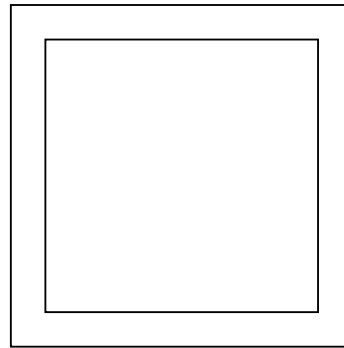
What is the length, in inches, of one side of the painting?

- **F.** 30
- **G.** 24
- **H.** 18
- **J.** 14
- **K.** 12

55. The altitude of a triangle is the distance from its base to the vertex opposite the base. If the length of the base (b) of a triangle and the triangle's altitude are equal in length, which of the following represents the area of the triangle?

A. $\dfrac{b^2}{2}$

B. $\dfrac{2b^2}{3}$

C. b^2

D. $4b$

E. $2b^2$

56. The graph of the equation $x = \dfrac{2}{y-2}$ is shown below.
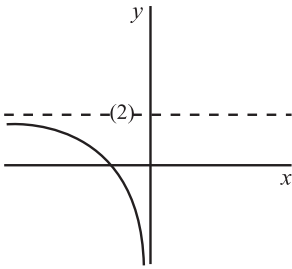
Which of the following best represents the equation $x = \left|\dfrac{2}{y-2}\right|$?

F.
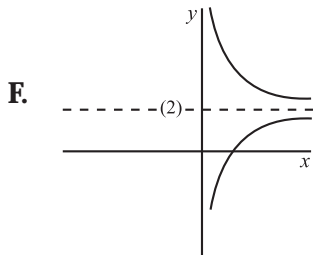
G.
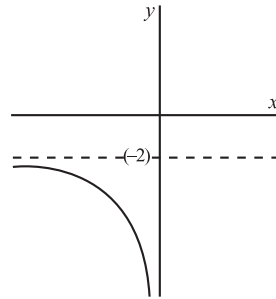
H.
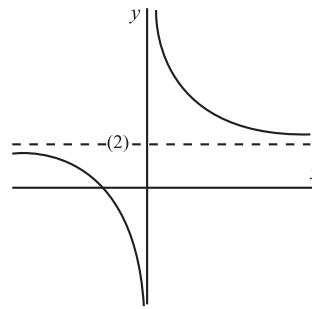
J.
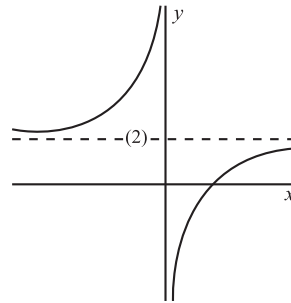
K.
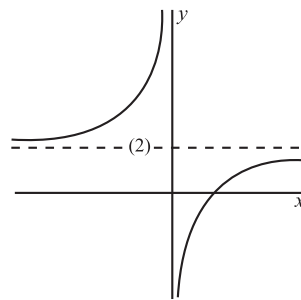
57. In △PQR below, if $\tan x > 1$, all of the following must be true EXCEPT:
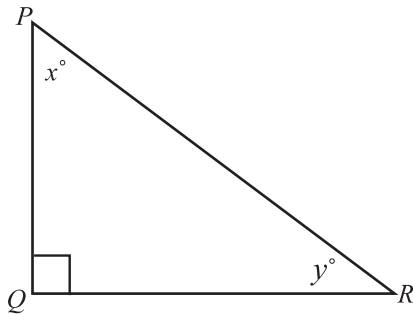
A. $x > 45$

B. $y > 45$

C. $\overline{PQ} \neq \overline{QR}$

D. $x + y = 90$

E. $x \neq y$

58. An isosceles triangle has two sides of length 3 feet each. The angle formed by the two 3-foot sides measures 32°. What is the length of the triangle's third side?

F. 3cos32°

G. 3sin32°

H. 3sin16°

J. 6tan16°

K. 6sin16°

59. If $m = n$ and $p > q$, then which of the following inequalities holds true in all cases?

A. $m - p > n - q$

B. $p - m < q - n$

C. $m - p < n - q$

D. $mp > nq$

E. $m + q > n + p$

60. In the standard (x,y) coordinate plane, the amplitude of a graph is half the distance between the graph's minimum and maximum y-values. What is the amplitude of the graph of the equation $y - 1 = 2\cos3\theta$?

F. 6

G. 3

H. 2

J. $\dfrac{3}{2}$

K. 1

STOP

Reading

40 Questions ■ Time—35 Minutes

Directions: This test consists of four passages, each followed by several questions. Read each passage and select the best answer for each question following the passage. Then, on your answer sheet, mark the oval corresponding to the best answer.

Passage I—Prose Fiction

Line   Although Bertha Young was thirty she still had moments like this when she wanted to run instead of walk, to take dancing steps on and off the pavement,
(5)   to bowl a hoop, to throw something up in the air and catch it again, or to stand still and laugh at—nothing—at nothing, simply.

What can you do if you are thirty
(10)   and, turning the corner of your own street, you are overcome, suddenly, by a feeling of bliss—absolute bliss!—as though you'd suddenly swallowed a bright piece of that late afternoon sun
(15)   and it burned in your bosom, sending out a little shower of sparks into every particle, into every finger and toe. . . ?

Oh, is there no way you can express it without being "drunk and disorderly?"
(20)   How idiotic civilization is! Why be given a body if you have to keep it shut up in a case like a rare, rare fiddle?

"No, that about the fiddle is not quite what I mean," she thought, running
(25)   up the steps and feeling in her bag for the key—she'd forgotten it, as usual—and rattling the letter-box. "It's not what I mean, because—Thank you, Mary"—she went into the hall. "Is nurse back?"
(30)   "Yes, M'm."

"I'll go upstairs." And she ran upstairs to the nursery.

Nurse sat at a low table giving Little B her supper after her bath. The baby
(35)   had on a white flannel gown and a blue woolen jacket, and her dark, fine hair was brushed up into a funny little peak. She looked up when she saw her mother and began to jump.
(40)   "Now, my lovey, eat it up like a good girl," said Nurse, setting her lips in a way that Bertha knew, and that meant she had come into the nursery at another wrong moment.
(45)   "Has she been good, Nanny?"

"She's been a little sweet all the afternoon," whispered Nanny. "We went to the park and I sat down on a chair and took her out of the carriage and a
(50)   big dog came along and put its head on my knee and she clutched its ear, tugged it. Oh, you should have seen her."

Bertha wanted to ask if it wasn't rather dangerous to let her clutch at a

(55) strange dog's ear. But she did not dare to. She stood watching them, her hands by her side, like the poor little girl in front of the rich little girl with the doll.

The baby looked up at her again,

(60) stared, and then smiled so charmingly that Bertha couldn't help crying:

"Oh, Nanny, do let me finish giving her supper while you put the bath things away."

(65) "Well, M'm, she oughtn't to be changed hands while she's eating," said Nanny, still whispering. "It unsettles her; it's very likely to upset her."

How absurd it was. Why have a baby

(70) if it has to be kept—not in a case like a rare, rare fiddle—but in another woman's arms?

"Oh, I must!" said she.

Very offended, Nanny handed her

(75) over.

"Now, don't excite her after her supper. You know you do, M'm. And I have such a time with her after!"

Thank heaven! Nanny went out of

(80) the room with the bath towels.

"Now I've got you to myself, my little precious," said Bertha, as the baby leaned against her.

She ate delightfully, holding up her

(85) lips for the spoon and then waving her hands. Sometimes she wouldn't let the spoon go; and sometimes, just as Bertha had filled it, she waved it away to the four winds.

(90) When the soup was finished Bertha turned round to the fire.

"You're nice—you're very nice!" said she, kissing her warm baby. "I'm fond of you. I like you."

(95) And, indeed, she loved Little B so much—her neck as she bent forward, her exquisite toes as they shone transparent in the firelight—that all her feeling of bliss came back again, and again she

(100) didn't know how to express it—what to do with it.

"You're wanted on the telephone," said Nanny, coming back in triumph and seizing *her* Little B.

1. Based on the passage, Bertha can reasonably be considered to be all of the following EXCEPT:

  A. imaginative.
  B. affectionate.
  C. timid.
  D. arrogant.

2. Nanny's facial expression upon seeing Bertha's arrival in the nursery suggests:

  F. relief as she can at last eat her supper.
  G. a vain attempt to suppress her joy at seeing Bertha.
  H. dislike for Bertha's ill-timed visits to the nursery.
  J. fear of dismissal from her job because the nursery is untidy.

3. Bertha uses the metaphor of a "rare, rare fiddle" (line 22) to suggest that:

  A. she considers her baby girl an extraordinary child.
  B. she is frustrated by not feeling free to express her musical talents.
  C. people of a certain age are expected to follow a certain code of behavior.
  D. wealthy mothers are not allowed to look after their children.

4. Nanny would most likely agree with which of the following characterizations of Bertha?

- **F.** She is a thoughtless person and an inexperienced mother.
- **G.** She is a kind employer but a strict mother.
- **H.** She is forgetful and has no sense of class distinctions in society.
- **J.** She is giddy and is always lost in her overactive imaginings.

5. Which of the following statements about the relationship between Bertha and Nanny do the details in the passage best support?

- **A.** Nanny is tired of working for Bertha and would like to find other employment.
- **B.** Bertha feels that Nanny is a competent nurse and would do anything to keep her on.
- **C.** Nanny considers herself the baby's primary caregiver and Bertha just an occasional visitor in the baby's life.
- **D.** Bertha prefers to give over control of the child to Nanny so that she is able to fulfill her inappropriate youthful fantasies.

6. It can most reasonably be inferred that the word *absurd*, as it is used in line 69, refers to:

- **F.** Nanny's overly possessive attitude towards the baby.
- **G.** the fact that women over 30 cannot be impulsive in behavior.
- **H.** Bertha's not being able to question Nanny's decision to let Little B play with a dog.
- **J.** the fact that Bertha is obligated to have a nanny to take care of her child.

7. In comparing Bertha to a "poor little girl" (line 57), the narrator is suggesting that Bertha:

- **A.** lacks emotional and psychological strength.
- **B.** is deprived of care-giving time with her baby.
- **C.** suffers from an unrealistic hope of having more babies.
- **D.** desires a closer relationship with Nanny.

8. It can be reasonably inferred from the passage that the central characteristic of Nanny is:

- **F.** kindness.
- **G.** disrespectfulness.
- **H.** jealousy.
- **J.** possessiveness.

9. Based on the passage, the kind of bliss that Bertha experienced, as described in the first three paragraphs, can best be described as a(n):

- **A.** emotion brought forth by a walk in the park.
- **B.** pleasant feeling caused by nothing specific.
- **C.** overwhelming feeling of maternal love.
- **D.** tingling feeling in one's fingers and toes.

10. From the use of the word "triumph" in the last paragraph, it is reasonable to infer that Nanny is:

- **F.** happy to have Little B and the nursery to herself again.
- **G.** glad that Little B has been able to spend some time with her mother.
- **H.** feeling justified in her total control of all matters pertaining to the nursery.
- **J.** glad because the phone call was about another baby being put under her charge.

Passage II—Social Studies

Line After the opening of the Erie Canal in 1825, the Legislature of New York directed a land survey for a state railroad that was to be constructed, at public
(5) expense, through the southern tier of counties from the Hudson River to Lake Erie. The unfavorable profile that the survey indicated apparently prompted the legislature to abandon the project.

(10) But, the notion of an east-to-west railroad spanning nearly the entire breadth of the state continued to hold sway over the minds of many New Yorkers, and the significant benefits that
(15) the Erie Canal had brought to the Mohawk Valley and surrounding country led the southern counties to demand a rail route that would work similar wonders in that region. This growing
(20) sentiment finally persuaded the legislature to charter, in April 1832, the New York and Erie Railroad Company, and to give it authority to construct tracks and regulate its own charges for transporta-
(25) tion.

During the following summer, a partial survey of the route was made by Colonel De Witt Clinton Jr., and in 1834 a second survey was made of the whole
(30) of the proposed route. When the probable cost was estimated, opposition to the project grew. Many detractors asserted that the undertaking was "chimerical, impractical, and useless."
(35) The road, they declared, could never be built and, if built, would never be used; the southern counties were mountainous, sterile, and worthless, and afforded no products requiring a market; and, in any
(40) case, these counties should find their natural outlet in the valley of the

Mohawk. Despite this opposition, in 1836, construction of the railroad began.

The Panic of 1837, which precipi-
(45) tated a major economic depression in the U.S., interfered with the work, but in 1838 the state legislature provided a construction loan of $3 million, and the first section of line, extending from
(50) Piermont on the Hudson to Goshen, was put in operation in September of 1841. In the following year, however, the company became insolvent and was placed by the courts in the hands of government
(55) receivers. This financial disaster delayed further progress for several years, and it was not until 1846 that sufficient new capital was raised to continue the work.

The original estimate for building the
(60) entire line of 485 miles had been $3 million, but already the road had cost over $6 million, and only a small portion had been completed. The final estimate now rose to $15 million, and, although
(65) some money was raised from time to time and new sections were built, whether the entire road would ever be competed was far from certain.

Ultimately, however, the courts
(70) allowed the company's assets out of receivership, and the company soon secured new subscriptions of some millions of dollars, while raising additional money by mortgaging the sections
(75) of railroad already finished. Finally, in 1851, after eighteen years of effort, the line was opened to Lake Erie. Various feeders, or branches, were also added, providing rail entry into Scranton,
(80) Pennsylvania, as well as Geneva and Buffalo, New York. The railroad's western terminus, at Lake Erie, was at Dunkirk, while its eastern terminus was at Piermont, near Nyack on the Hudson,

(85) about 25 miles by boat from New York City.

In the end, even the highest cost estimate of $15 million, made during construction, turned out far too low. The (90) company started its operations in 1851 with capital obligations of no less than $26 million—an outrageously large sum for those days. When the Erie Railroad began operations, the heavy burden of (95) these initial obligations soon became apparent. Freight rates were so high that indignant shippers began banning together in mutual support, and en masse appealed to the state for legislative relief. (100) And, although the company had raised a substantial amount of money for improvements after 1849, the condition of the railway, and the reputation of the company, steadily declined. The Erie (105) Railroad soon became notorious for its many accidents, some due to carelessness in the running of trains, others due to the breaking of the brittle iron rails.

In spite of these problems, the (110) business of the Erie grew. In 1852, it acquired the Ramapo, Paterson, and Hudson River Railroads, thereby securing a more direct connection with New York City.

11. It can be inferred from the passage that the Erie Railroad cost approximately:

    A. $36 million.
    B. $26 million.
    C. $15 million.
    D. $3 million.

12. As it is used in the passage, the word *subscriptions* (line 72) most nearly means:

    F. an agreement to order a specified number of issues of a newspaper.
    G. receiving discounted tickets for a series of railway trips.
    H. contributions of a specified amount to a project.
    J. a membership fee paid regularly.

13. Which of the following statements best describes the author's method and purpose for addressing his subject?

    A. Presenting a comparative history of railroads to justify the success story of the Erie Railroad
    B. Constructing an argument for the construction of the Erie Railroad based on the sentiment of the people of the state of New York
    C. Presenting the author's own personal experience in the field of railway construction in order to acquaint the reader with the financial hurdles faced by the Erie Railroad project
    D. Presenting a series of researched facts in order to provide a detailed chronological history of the Erie Railroad

14. Based on the passage, it can be reasonably inferred that the most remote connecting points of the Erie Railroad were at:

    F. Lake Erie and New York City.
    G. Lake Erie and Piermont on the Hudson.
    H. the cities of Geneva and Buffalo.
    J. Mohawk Valley and Lake Erie.

15. Opponents of the Erie Railroad project provided all of the following reasons in arguing against constructing the Erie Railroad EXCEPT:

A. cost estimates were too high.
B. the proposed route was through extremely rough terrain.
C. there weren't enough marketable products along the proposed route.
D. interest in a connection to Lake Erie was insufficient.

16. How long after construction of the Erie Railroad began did it take for the railroad to first reach Lake Erie?

F. 3 years
G. 10 years
H. 18 years
J. 30 years

17. In the context of the passage, the word *insolvent* (line 53) most nearly means:

A. incapable of being solved.
B. unable to pay debts.
C. unable to distribute.
D. incapable of showing profit.

18. The fact that construction of the railroad continued despite the Panic of 1837 was due primarily to:

F. the raising of additional money by the Erie Railroad Company.
G. a loan from the Legislature of New York.
H. the acquisition of feeders to the main line.
J. a court order allowing construction to proceed.

19. It can be reasonably inferred from the passage that the Erie Railroad Company developed an unfavorable reputation because of its:

A. many accidents.
B. high freight rates.
C. bankruptcy.
D. lack of connecting lines.

20. The passage provides clearest support for which of the following statements?

F. Constructing the Erie Railroad is a remarkable feat of engineering.
G. The construction of the Erie Railroad was a disaster of unimaginable proportions.
H. Subsequent surveys changed the planned route during construction.
J. The proposed route for the railroad was successfully completed and expanded upon.

Passage III—Humanities

Line   On July 1, 1882, a brief notice appeared in the *Portsmouth* (England) *Evening News*. It read simply, "Dr. Doyle begs to notify that he has removed to 1, Bush
(5)   Villas, Elm Grove, next to the Bush Hotel." So was announced the newly formed medical practice of a 23-year-old graduate of Edinburgh University— Arthur Conan Doyle. But the town of
(10)   Southsea, the Portsmouth suburb in which Doyle had opened his office, already had several well-established physicians, and while he waited for patients the young Dr. Doyle found
(15)   himself with a great deal of time on his hands.
        To fill it, he began writing—short stories, historical novels, whatever would keep him busy and, hopefully, bring

(20) additional funds into his sparsely filled coffers. By the beginning of 1886, his practice had grown to the point of providing him with a respectable if not munificent income, and he had managed *(25)* to have a few pieces published. Although literary success still eluded him, he had developed an idea for a new book, a detective story, and in March he began writing the tale that would give birth to *(30)* one of literature's most enduring figures.

Although he was familiar with and impressed by the fictional detectives created by Edgar Allan Poe, Emile Gaboriau, and Wilkie Collins, Doyle *(35)* believed he could create a different kind of detective, one for whom detection was a science rather than an art. As a model, he used one of his medical school professors, Dr. Joseph Bell. As Bell's *(40)* assistant, Doyle had seen how, by exercising his powers of observation and deduction and asking a few questions, Bell had been able not only to diagnose his patients' complaints but also to *(45)* accurately determine their professions and backgrounds. A detective who applied similar intellectual powers to the solving of criminal mysteries could be a compelling figure, Doyle felt.

(50) At first titled *A Tangled Skein*, the story was to be told by his detective's companion, a Dr. Ormand Sacker, and the detective himself was to be named Sherrinford Holmes. But by April, 1886, *(55)* when Doyle finished the manuscript, the title had become *A Study in Scarlet*, the narrator Dr. John H. Watson, and the detective Mr. Sherlock Holmes.

A tale of revenge, in which Holmes is *(60)* able to determine that two Mormons visiting England from Utah have been killed by Jefferson Hope, an American

working as a London hansom cab driver, *A Study in Scarlet* was rejected by several *(65)* publishers before being accepted that fall for publication by Ward, Lock & Company as part of *Beeton's Christmas Annual* in 1887. Although the author asked to be paid a royalty based on sale *(70)* of the book, his publisher offered instead only a flat fee of £25 for the copyright (the equivalent of approximately $50 today). Doyle reluctantly accepted.

A handful of reviewers commented *(75)* kindly on the story, but the reading public as a whole was unimpressed. Ward, Lock published *A Study in Scarlet* in book form the following year, while the disappointed author returned to his *(80)* historical novels, with which he had finally achieved some modest success. Fictional detection, Doyle thought, was behind him. In August, 1889, however, he was approached by the editor of the *(85)* American *Lippincott's Monthly Magazine*, published in Philadelphia and London, to write another Sherlock Holmes story. Although he had little interest in continuing Holmes's adven- *(90)* tures, Doyle was still in need of money and accepted the offer.

Published in *Lippincott's* in February, 1890, and in book form later that year, *The Sign of the Four* chronicled Holmes's *(95)* investigation of the murder of Bartholomew Sholto and his search for Jonathan Small and a treasure stolen by British soldiers in India. It too, however, met with little enthusiasm from the *(100)* public. In the meantime, however, Doyle's other small literary successes had enabled him to move to London, where he became a consulting physician. Fortunately, even this new London *(105)* practice did not keep him very busy,

leaving him time to concentrate on his writing.

In April, 1891, he submitted a short Sherlock Holmes story, "A Scandal in (110) Bohemia," to a new magazine called *The Strand*. It was with the publication of this story, and the series of Holmes tales which followed, that the public finally took an interest in Dr. Doyle's detective, (115) enabling him to give up his practice and turn to writing full time. Despite his own continuing lack of enthusiasm for his protagonist—he considered the Holmes stories insignificant compared to his (120) "serious" historical novels—spurred by the public clamor for more Sherlock Holmes, Doyle eventually wrote 56 short stories and four novels in the series, and in the process created what may be the (125) best-known character in all of English literature.

21. As it is used in the passage, the word *munificent* (line 24) most nearly means:

- **A.** noble.
- **B.** sparse.
- **C.** bountiful.
- **D.** extra.

22. According to the passage, the public finally expressed an interest in Dr. Doyle's detective fiction stories after they were published in:

- **F.** *Beeton's Christmas Annual.*
- **G.** *Portsmouth Evening News.*
- **H.** *The Strand.*
- **J.** *Lippincott's Monthly Magazine.*

23. It can be inferred from the passage that Dr. Doyle could be appropriately described as any of the following EXCEPT a(n):

- **A.** doctor who was less than fully devoted to a career in medical.
- **B.** writer passionate about his fictional detective Sherlock Holmes.
- **C.** writer who considered his historical novels to be of some importance.
- **D.** author who was open-minded to publication of his works in America.

24. What set Dr. Doyle's detective fiction apart from previously published detective fiction?

- **F.** His fictional detection was firmly based on scientific methodology.
- **G.** He always based his protagonists on the exploits of Americans living abroad.
- **H.** Most of his fictional detection was based on the solving of real mysteries.
- **J.** His detective stories were based primarily on medical mysteries.

25. Among the following, who was Doyle's biggest influence in the creation of his fictional detective Sherlock Holmes?

- **A.** Doyle's publicist
- **B.** A police detective in Southsea
- **C.** Dr. Joseph Bell
- **D.** Edgar Allan Poe

26. According to the passage, Doyle started writing because:

    F. he had always been fascinated by murder mysteries.

    G. he hoped to stay occupied and make extra money.

    H. he had always aspired to be a famous author.

    J. there were too many physicians in Southsea.

27. The author of the passage uses the word *fortunately* in line 104 in order to suggest that:

    A. consulting physicians in London are typically too busy to engage in hobbies such as writing.

    B. it would have been in Doyle's best interest at the time to concentrate on his medical practice.

    C. Doyle was convinced at that time that his literary career was destined for success.

    D. Doyle's literary career was more important than his medical career.

28. Based on the passage, it can be most reasonably inferred that Doyle moved to London because:

    F. he could finally afford to reside there.

    G. he wanted to practice medicine in a larger town with more opportunities.

    H. of the many opportunities there to earn supplemental income.

    J. his publisher was based in London.

29. It can be inferred from the passage that Doyle abandoned his medical career primarily because of the:

    A. success of his historical novels.

    B. increase in demand for more of Holmes's adventures.

    C. large number of medical practitioners in London.

    D. lack of interest in medical journals among publishers.

30. At a minimum, about how long had Doyle been writing fictional stories before the public began to take a strong interest in any of his stories?

    F. Two years

    G. Five years

    H. Seven years

    J. Nine years

Passage IV—Natural Science

[*The following passage discusses the difficulties involved in identifying common causes for community cancer clusters.*]

Line Community cancer clusters are localized patterns of excessive cancer occurrence. They are viewed quite differently by citizen activists than by epidemiologists.

(5) Environmentalists and concerned local residents, for instance, might immediately suspect environmental radiation as the culprit when a high incidence of cancer cases occurs near a nuclear facility.

(10) Epidemiologists, in contrast, would be more likely to say that the incidences were "inconclusive" or the result of pure chance. And when a breast cancer survivor, Lorraine Pace, mapped twenty

(15) breast cancer cases occurring in her West Islip, Long Island, community, her rudimentary research efforts were guided more by hope—that a specific environ-

mental agent could be correlated with the
(20) cancers—than by scientific method.

When epidemiologists study clusters
of cancer cases and other noncontagious
conditions such as birth defects or
miscarriage, they take several variables
(25) into account, such as background rate
(the number of people affected in the
general population), cluster size, and
specificity (any notable characteristics of
the individual affected in each case). If a
(30) cluster is both large and specific, it is
easier for epidemiologists to assign
blame. Not only must each variable be
considered on its own, but it must also be
combined with others. Lung cancer is
(35) very common in the general population.
Yet when a huge number of cases turned
up among World War II shipbuilders who
had all worked with asbestos, the size of
the cluster and the fact that the men had
(40) had similar occupational asbestos
exposures enabled epidemiologists to
assign blame to the fibrous mineral.

Furthermore, even if a cluster seems
too small to be analyzed conclusively, it
(45) may still yield important data if the
background rate of the condition is low
enough. This was the case when a
cervical cancer turned up almost simulta-
neously in a half-dozen young women.
(50) While six would seem to be too small a
cluster for meaningful study, the cancer
had been reported only once or twice
before in the entire medical literature.
Researchers eventually found that the
(55) mothers of all the afflicted women had
taken the drug diethylstilbestrol (DES)
while pregnant.

Although several known carcinogens
have been discovered through these kinds
(60) of occupational or medical clusters, only
one community cancer cluster has ever

been traced to an environmental cause.
Health officials often discount a commu-
nity's suspicion of a common environ-
(65) mental cause because citizens tend to
include cases that were diagnosed before
the afflicted individuals moved into the
neighborhood. Add to this the problem
of cancer's latency. Unlike an infectious
(70) disease like cholera, which is caused by a
recent exposure to food or water
contaminated with the cholera bacte-
rium, cancer may have its roots in an
exposure that occurred ten to twenty
(75) years earlier. Citizens also conduct what
one epidemiologist calls "epidemiological
gerrymandering": finding cancer cases,
drawing a boundary around them, and
then mapping this as a cluster.

(80) Do all these caveats mean that the
hard work of Lorraine Pace and other
community activists is for naught? Not
necessarily. Together with many other
reports of breast cancer clusters on Long
(85) Island, the West Islip situation high-
lighted by Pace has helped epidemiolo-
gists lay the groundwork for a well-
designed scientific study.

31. It can be inferred from the passage that
community cancer clusters refer to cancer
patterns existing in a:

A. particular religious community.
B. communal living environment.
C. particular geographic location.
D. specific part of the human body.

32. As it is used in the passage, the word
rudimentary (line 17) most nearly means:

F. healthy.
G. basic.
H. scientific.
J. rigorous.

33. What led the epidemiologists to conclude that asbestos exposure causes lung cancer (lines 41–42) was a combination of all of the following EXCEPT:

  A. the number of cases of lung cancer was large.
  B. all the people affected were World War II shipbuilders.
  C. spouses of asbestos workers did not typically develop lung cancer.
  D. all the case subjects were men who had worked with asbestos.

34. The case of six young women with cervical cancer (lines 47–49) is an example of a cluster that has a:

  F. high background rate and small size.
  G. low background rate and is nonspecific.
  H. high background rate and is fairly specific.
  J. low background rate and is fairly specific.

35. Based on the information in the second paragraph (lines 21–43), which of the following can most reasonably be inferred about cancer and birth defects?

  A. The size of the cluster of people affected is similar in both.
  B. Both are caused by the same virus.
  C. Cancer victims and people with birth defects have similar backgrounds.
  D. Both are impossible to transmit by contact.

36. Which of the following would be most similar to "epidemiological gerrymandering," which the author describes in the fourth paragraph (lines 76–77)?

  F. A politician's changing voting district boundaries to gain advantage for elections
  G. A census report's correlating statistical data according to gender and race
  H. A school's redistributing students according to their academic qualifications to different grades
  J. A professor's declaring the result of her student's research "inconclusive" due to lack of sufficient environmental variables

37. Health officials tend to discount the work of citizens involved in mapping cancer clusters partly because citizens often:

  A. fail to investigate the background of individual case subjects.
  B. fail to gather data from a broad enough geographical area.
  C. overemphasize individual characteristics of the cases.
  D. discount occupational hazards specific to each case.

38. It can be reasonably inferred from the information in the second paragraph (lines 21–43) that one of the highest background rates in cancer studies is for:

  F. cervical cancer.
  G. lung cancer.
  H. breast cancer.
  J. bone cancer.

39. The author's main objective in the passage is to:

    A. discuss the response of epidemiologists to a cancer threat in a community.

    B. inform the reader of Lorraine Pace's activism in West Islip.

    C. discuss the difficulties involved in identifying common causes of community cancer clusters.

    D. explain the relevance of environmental agents in the study of community cancer clusters.

40. At the end of the passage, the author concludes that:

    F. community cancer clusters are viewed differently by citizen activists, who are hindered by preconceptions, than by health officials.

    G. the efforts of ordinary citizens can help scientists determine the causes of community cancer clusters.

    H. health officials need the help of concerned citizens in order to determine the causes of community cancer clusters.

    J. local residents sometimes hinder the progress of scientific research by pushing for a quick resolution.

STOP

Science

40 Questions ■ Time—35 Minutes

Directions: This test consists of seven passages, each followed by several questions. Read each passage and select the best answer for each question following the passage. Then, on your answer sheet, mark the oval corresponding to the best answer. You may NOT use a calculator on this test.

Passage I

Lake ecosystems are highly sensitive to changes in acid-base balance, also referred to as *pH level*. Growing concern over the last few decades about increases in lake sulfate concentrations and pH has led to an environmental campaign to reduce the amount of sulfates released into the atmosphere from industrial sources. To determine the impact of sulfates on some lake ecosystems, ecologists conducted two experiments in a particular alpine area.

In order to take into account changing climatic parameters in the study area, the researchers first looked at rainfall and temperature since 1900. The results appear in Figure 1.

Figure 1
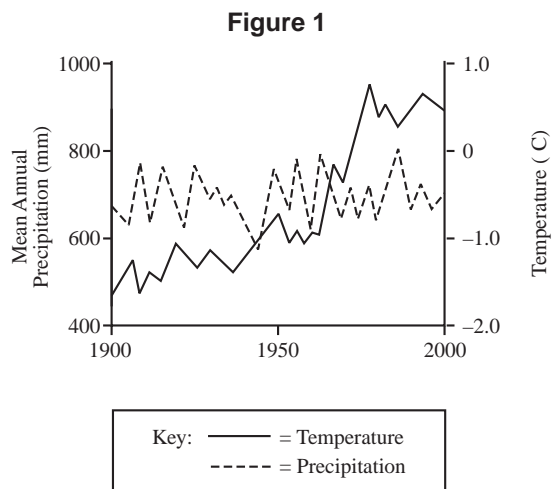
Experiment 1

Ecologists measured the terrestrial deposition (land deposits) of sulfate at five alpine stations located adjacent to five particular lakes annually from 1993 to 2000. Sulfate was measured in soil and rock samples. The averages for two-year sampling periods appear in Table 1 on page 43.

Table 1

Lakes	Sulphate Concentration (Mg/L)			
	1993–94	1995–96	1997–98	1999–2000
1	0.65	0.60	0.60	0.59
2	0.60	0.59	0.58	0.50
3	0.82	0.82	0.80	0.69
4	0.89	0.69	0.66	0.66
5	0.68	0.65	0.67	0.69

Experiment 2

In 2000, researchers looked at the sulfate concentrations (in equivalents/L) and pH in the lakes adjacent to the alpine stations and compared them to concentrations recorded in the same lakes in 1993. Results appear in Figure 2.

Figure 2
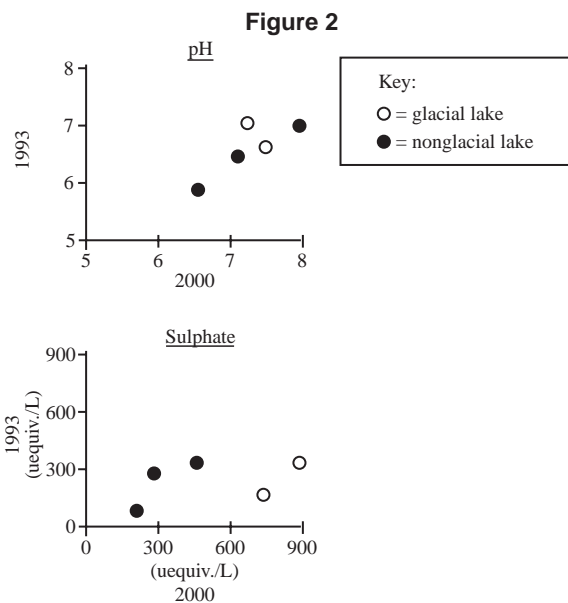
1. At which alpine station did terrestrial sulfate concentration remain the most stable over the study period?

A. The station adjacent to lake 1
B. The station adjacent to lake 3
C. The station adjacent to lake 4
D. The station adjacent to lake 5

2. The results of experiment 2 show that, from 1993 to 2000, pH levels:

F. remained stable in the non-glacial lakes but increased in the glacial lakes.
G. decreased in the glacial lakes but decreased in the non-glacial lakes.
H. increased in the non-glacial lakes but decreased in the glacial lakes.
J. increased in the non-glacial lakes while remaining relatively stable in the glacial lakes.

3. The data collected from Experiments 1 and 2 show:

A. no clear trend in sulfate concentration among terrestrial deposits, but increasing sulfate concentrations in the lakes.
B. increasing sulfate concentration among terrestrial deposits, but decreasing sulfate concentrations in the lakes.
C. no clear trend in sulfate-concentration levels either among terrestrial deposits or among the lakes.
D. increasing sulfate concentrations among terrestrial deposits, but no clear trend in sulfate-concentration levels in the lakes.

4. Which of the following hypotheses do the experimental data best support?

    F. Increasing precipitation levels bring increasing amounts of airborne sulfate emissions into the lakes.

    G. Increasing air temperatures have the effect of increasing pH levels in the lakes, which in turn increase sulfate-concentration levels in the lakes.

    H. The melting of glacial ice due to gradually increasing air temperatures increases the amount of sulfates in lake water.

    J. Wide variations in precipitation levels contribute to wide variations among the lakes in both pH and sulfate-concentration levels.

5. Based on the experimental data, which of the following conclusions is the most reasonable one?

    A. Industrial sulfate affects pH levels to a greater extent than naturally occurring sulfate.

    B. Sufficiently warm water temperatures are needed in order for sulfate to affect the pH levels in lake water.

    C. In lake water, pH levels are sensitive to sulfate concentration levels.

    D. In lake water, sulfate concentration levels have little or no impact on pH levels.

Passage II

Spacecraft such as the Mariner 10 in the 1970s and the Voyagers in the 1990s successfully passed at close range to nearly all the known planets in our Solar System, providing new information about them that we otherwise would not know. Table 1 shows data collected during these missions as well as other data already known about the planets. Some of the numbers are approximations only. A planet's *rotational period* is the time it takes to turn

Table 1

Terrestrial Bodies	Average Density (water =1)	Average Distance From Sun (millions of miles)	Rotational Period (Earth days)	Orbital Eccentricity	Mean Surface Temp. (°C)	Description
Mercury	5.4	36	59	.206	179	Rocky, ferrous
Venus	5.2	67	243	.007	480	Rocky, ferrous
Earth	5.5	93	24 hrs	.017	22	Rocky, ferrous
Mars	3.9	142	25 hrs	.093	−23	Rocky
Jupiter	1.3	484	9 hrs	.048	−150	Gaseous
Saturn	0.7	887	10 hrs	.056	−180	Gaseous
Uranus	1.2	1,783	11 hrs	.047	−210	Icy, gaseous
Neptune	1.7	2,794	16 hrs	.009	−220	Icy, gaseous
Pluto	1	3,600	6	.25	−230	Icy, rocky, gaseous

once on its axis, completing one planetary day. A planet's *orbital eccentricity* is the percent difference between an elliptical path's longest axis and shortest axis. A perfectly circular orbit would have an orbital eccentricity of zero (0).

The following figure is a plot of the densities and diameters of the terrestrial (nongaseous) planets.
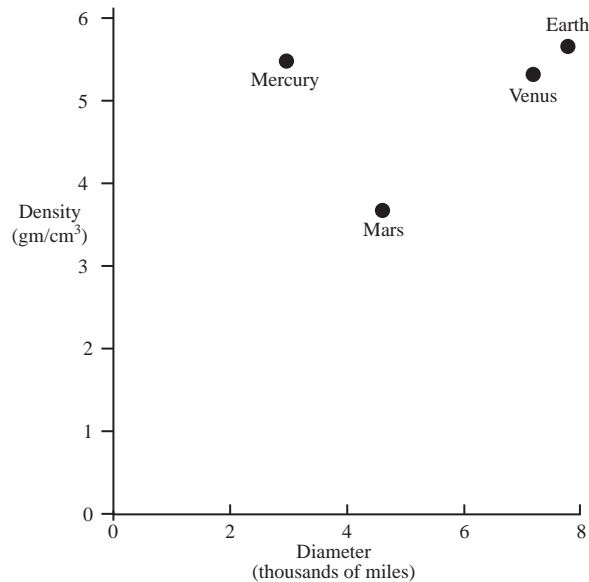
6. Which of the following statements is best supported by the data in Table 1 on page 45?

   F. Gaseous planets tend to have higher orbital eccentricities than non-gaseous planets.
   G. Planets that rotate slowly tend to have higher surface temperatures than other planets.
   H. Planets with low densities tend to rotate more slowly than high-density planets.
   J. The gravity of the Sun operates to reduce orbital eccentricity.

7. The data provided in Table 1 on page 45 show that:

   A. Jupiter has the shortest rotational period and the third highest orbital eccentricity.
   B. Pluto has the lowest average density and the highest orbital eccentricity.
   C. Earth has the highest average density and the fifth longest rotational period.
   D. Mercury has the highest average density and the highest orbital eccentricity.

8. The planet with an average density closest to that of water is:

   F. Uranus.
   G. Saturn.
   H. Pluto.
   J. Mercury.

9. On Mercury, one year (the time it takes to orbit once around the sun) is about 88 Earth days. How many full rotations does Mercury complete in one Mercury year?

   A. 1
   B. 6
   C. 59
   D. It cannot be determined from the information given.

10. The data presented suggest that there is:

    F. a direct linear relationship between density and diameter among all of the terrestrial planets except Mercury.

    G. a direct linear relationship between density and diameter among all of the terrestrial planets.

    H. a direct linear relationship between density and diameter among the terrestrial planets but not among the gaseous planets.

    J. no clear relationship between density and diameter among the terrestrial planets.

11. Although Venus has a higher mean surface temperature than Mercury, the average high temperatures on the surface of Venus are less than those on Mercury. Which of the following is the most reasonable explanation for this apparent contradiction?

    A. Mercury's average density is greater than that of Venus.

    B. Mercury is closer to the Sun than Venus.

    C. Mercury's rotational period is less than that of Venus.

    D. Mercury's orbital eccentricity is greater than that of Venus.

Passage III

The state forestry commission engaged a group of ecologists to study the nutrient flow in a forest on federal lands that was being considered for lease to a logging company. They were also asked to study the effects of clear-cutting in selected areas to predict what the long-term effects on the nutrient budget might be. The scientists selected several small sections of the forest for observation and experiment.

Table 1

Average Concentrations of Dissolved Substances in Bulk Precipitation and Stream Water in 6 Undisturbed Experimental Watersheds

Substance	Precipi-tation	Stream Water	Percent Change
Calcium	0.21	1.51	−619%
Magnesium	0.05	0.37	−640%
Potassium	0.10	0.23	−130%
Sodium	0.12	0.94	−683%
Aluminum	0.01	0.24	−2,300%
Ammonium	0.22	0.05	340%
Sulfate	3.10	6.20	−100%
Nitrate	1.30	1.14	12%
Chloride	0.42	0.64	−52%
Dissolved Silica	0.03	4.59	−15,300%

Notes: Data is given in kilograms per dry weight of materials per hectar of the watershed. Basin-caught materials are coarse, net-caught materials are fine, and filter-caught materials are super-fine.

The first task was to estimate the average nutrient flow within the entire forest area. Table 1 above shows their estimate based on six experimental areas chosen within the forest. Nutrients enter the forest ecosystem via precipitation, so rain gauges were set up in various locations in the study areas. Nutrients exit the ecosystem through runoff from streams and rivers, so the ecologists measured stream flows in the designated areas.

After estimating the overall nutrient flow in this forest, the ecologists had one 15-hectare* area cleared of trees in order to determine the amount of increase that would occur in runoff. The trees were removed from the area, but nothing else was disturbed. For the first two

———

*A hectare is a metric unit of measure equal to 2.471 acres.

Table 2
Annual Losses of Particulate Matter

Source of Output	Year	Watershed 1 Undisturbed Area		Watershed 2 Deforested Area	
		Organic	Inorganic	Organic	Inorganic
Ponding Basin	1	4.62	8.30	35.41	158.32
Net	1	0.43	0.02	0.26	0.01
Filter	1	2.64	2.80	4.23	4.80
Ponding Basin	2	11.39	31.00	45.13	321.88
Net	2	0.43	0.02	0.25	0.03
Filter	2	3.32	3.70	6.24	7.10
Ponding Basin	3	3.83	5.78	53.72	540.32
Net	3	0.42	0.01	0.27	0.04
Filter	3	2.61	2.97	8.73	12.98

Notes: Data is given in kilograms per dry weight of materials per hectar of the watershed. Basin-caught materials are coarse, net-caught materials are fine, and filter-caught materials are super-fine.

years after the logging, an herbicide was applied so that no vegetation would grow back. The ecologists then compared this cleared watershed with one of the intact watersheds under study. They measured the stream flow for the first three years after the logging took place. Table 2 above summarizes the amounts of organic and inorganic matter found at the watershed basin. A net and filter system was utilized to catch finer matter as the runoff exited the watershed area.

12. Based on the experimental data collected, the forest appears to be experiencing a net:

   F. loss in all measured nutrients.
   G. loss in all but two measured nutrients.
   H. gain in all but two measured nutrients.
   J. gain in all measured nutrients.

13. The data provide LEAST support for which of the following hypotheses about the impact of clear-cutting a forest ecosystem during the first three years after deforestation?

   A. Clear-cutting has the effect of increasing the amount of coarse particulate matter that exits the ecosystem.
   B. Clear-cutting has the effect of increasing the loss of super-fine particulate matter that exits the ecosystem.
   C. Clear-cutting has little effect on the amount of fine particulate matter that exits the ecosystem.
   D. Clear-cutting has the effect of increasing the loss of organic matter but not inorganic matter.

14. Which of the following claims is best supported by the data in Table 2 on page 48?

   F. The undisturbed watershed area received more precipitation during Year 2 than during either Year 1 or Year 3.

   G. The deforested watershed area contains a greater amount of organic matter than inorganic matter.

   H. The herbicide applied to the deforested area did not effect the amount of organic matter exiting that area.

   J. Before the removal of any trees, the undisturbed watershed area contained less inorganic matter than the area where the trees were cleared.

15. Assuming that sodium is naturally found primarily as a fine material rather than either a coarse or super-fine material, which of the following conclusions is best supported by the data?

   A. In the deforested area, less sodium was lost during Year 2 than during Year 3.

   B. In the deforested area, less sodium was lost during Year 1 than during Year 2.

   C. In the undisturbed area, about the same amount of sodium was lost during all three years.

   D. In the undisturbed area, less sodium was lost during Year 2 than during Year 3.

16. Which of the following forecasts for the longer-term nutrient budget in the two 15-hectare areas compared in Table 2 on page 48 is most reasonable?

   F. Nutrient losses in the deforested area will slowly decline while nutrient losses in the undisturbed area will increase.

   G. Both the undisturbed and deforested areas will experience increasing losses of nutrients.

   H. Nutrient losses in the deforested area will slowly increase while nutrient losses in the undisturbed area will slowly decrease.

   J. Nutrient losses in the undisturbed area will remain stable over the longer term while nutrient losses in the deforested area will slowly decline.

17. Which of the following, if true, would most seriously call into question any conclusions about the entire forest's nutrient budget based on the data in Table 1 on page 47?

   A. The total precipitation in the six experimental areas is significantly less than the total precipitation in the remaining areas of the forest.

   B. The average precipitation per hectare is less in the six experimental areas than in the remaining areas of the forest.

   C. The forest's streams and rivers run mainly through the six experimental areas.

   D. In the experimental areas, soil nutrients are found in proportions that differ from their proportions in other areas of the forest.

Passage IV

Biologists have discovered certain genes (the basic unit of genetic material found on the chromosomes) that behave very differently depending on whether they are passed down to offspring from the father or the mother. These genes, called imprinted genes, are chemically altered in cells that give rise to eggs and sperm. These alterations result in dramatically different properties. In the imprinted genes that have been most fully studied, the female alters the gene so that certain proteins are not produced. The protein remains active in the father's genes. Researchers have posed numerous theories to explain the evolution of imprinted genes. Three of the theories are presented below.

Competing Parental Interest Theory

Some biologists think that imprinted genes evolved in a battle between the sexes to determine the size of offspring. It is to the genetic advantage of the female to rear a number of offspring, all of which will pass along her genetic material. Consequently, while she wants each offspring to be healthy, she does not want them to be so large that the strain of feeding and/or delivering them would jeopardize her ability to bear future babies.

Conversely, it is to the genetic advantage of males in non-monogamous species (species that do not always mate for life) to have the mother expend as much of her resources as possible to ensure the health of his offspring. He is not concerned with her ability to bear future offspring, since these will not necessarily be fathered by him (and, therefore, will not be transmitting his genetic material). Hence, imprinted genes have developed in this parental tug-of-war. Normally, each offspring receives one copy of an imprinted gene from the father and one from the mother. The changes that the parents make in their genes result in an offspring that is smaller than the male would like and larger than the female would like.

Anti-Cancer Theory

This theory holds that imprinted genes evolved to prevent cancer. The genes have been found in the placenta (an organ that develops to nourish a growing fetus). Placental tissue grows and burrows into the uterus, where the fetus develops. The ability to grow and invade tissues is also seen in aggressive cancers. Imprinted genes might have developed to ensure that the potentially dangerous placenta will not develop if there is no fetus to nourish. The female might inactivate certain growth genes in her eggs, while the sperm kept them turned on. If no fertilization took place, the growth would not occur. If a sperm did join the egg, the male's gene would ensure that the protein developed.

Protein Control Theory

A third group of biologists holds that imprinted genes developed to ensure the precise regulation of certain proteins. Genes do their work by initiating the production of different proteins. Some proteins involved in the growth of embryos may need to be regulated with great precision to ensure the healthy development of the offspring. Proponents of the protein control theory suggest that this careful regulation might be easier if only one parent is involved. Thus, one parent might turn off such genes, leaving the regulation to the other.

18. Which of the following experimental findings poses the most serious difficulties for proponents of the anti-cancer theory?

   F. When a mouse was genetically engineered so that it contained two copies of every gene from its mother only, the embryo was unable to develop.
   G. Research in animals that lay eggs has never turned up an imprinted gene.
   H. Imprinted genes have been found in plants, which have no placentas.
   J. Research has shown that imprinted genes have not evolved rapidly as they usually do in competitive situations.

19. Supporters of the protein control theory believe that:

   A. imprinted genes are used to regulate crucial proteins.
   B. imprinted genes are active only in females.
   C. imprinted genes should not be found in monogamous species (ones that mate for life).
   D. only the male passes down imprinted genes to the offspring.

20. Supporters of the competing parental interest theory assume that:

   F. only females have an interest in regulating the size of their offspring.
   G. only males have an interest in ensuring the health and survival of their offspring.
   H. both males and females have an interest in producing as many offspring of their own sex as possible.
   J. both males and females have an interest in transmitting their genetic material to as many offspring as possible.

21. Supporters of all three theories would agree that:

   A. imprinted genes evolved as a means of regulating reproduction-related events.
   B. imprinted genes should be absent in non-placental animals (animals whose offspring develop without a placenta).
   C. if an embryo is formed without female-imprinted genes, the future ability of the mother to bear off-spring will be jeopardized.
   D. imprinted genes should always be turned off in the mother.

22. Which of the following findings is best explained by the competing parental interest theory?

   F. An imprinted gene has been discovered in humans that appears to influence a child's social skills.

   G. In the imprinted genes that have been most fully studied, the female turns the gene off, while the male's gene remains active.

   H. Studies with a monogamous mouse species indicate that imprinted genes are not active.

   J. One of the imprinted genes studied is known to control a growth-stimulating hormone.

23. In a rare pregnancy disorder called hydatidiform mole, an abnormal cluster of cells grows in place of the placenta. This cluster grows so large that there is no room for the development of the fetus. The embryo in such pregnancies has been found to carry only the father's genes. This fact could be used to support:

   I. The competing parental interest theory

   II. The anti-cancer theory

   III. The protein control theory

   A. I only

   B. II only

   C. II and III only

   D. I, II, and III

24. Researchers conducted breeding studies with two species of mice. Species A was monogamous, while Species B was not. Supporters of the competing parental interest theory hypothesized that the monogamous species was unlikely to have active imprinted genes (since the fathers would have the same genetic stake in all the offspring born). Which of the following experimental results would they expect?

   F. When females from Species A were bred with males from Species B, the resulting offspring were extremely small.

   G. When females from Species A were bred with males from Species B, the resulting offspring were extremely large.

   H. When females from Species B were bred with males from Species A, the resulting offspring were extremely large.

   J. The offspring of Species B mice were consistently smaller than the offspring of Species A mice.

Passage V

Electrical circuits that allow electrical signals with some *frequencies* (number of waves per second) to pass while suppressing others are called *filters*. They are used in nearly every electronic device, from computers to VCRs. They may contain *resistors*, which resist the flow of current through a wire, *inductors*, which resist change in the current, and *capacitors*, which store electric charge. The following figure shows the design of three types of filters.
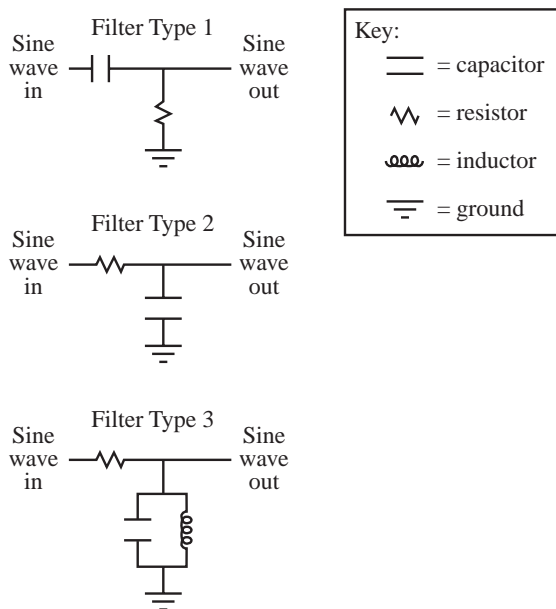

The effects of a filter can be demonstrated with a *frequency response curve*. Such a curve depicts the *amplitude* (wave height) of the output (vertical axis) as one varies the input frequency (horizontal axis), while keeping the input amplitude constant. Several experiments were conducted to test the effects of some filters.

Experiment 1

Researchers fed *sine waves* (oscillating voltage) into an electrical circuit containing the three filters depicted in the figure above. The input amplitude was fixed at 2.0 volts. The amplitude of the resulting waves was measured, and the frequency response curves in the following figure were obtained.

K=1000

M=1 Million
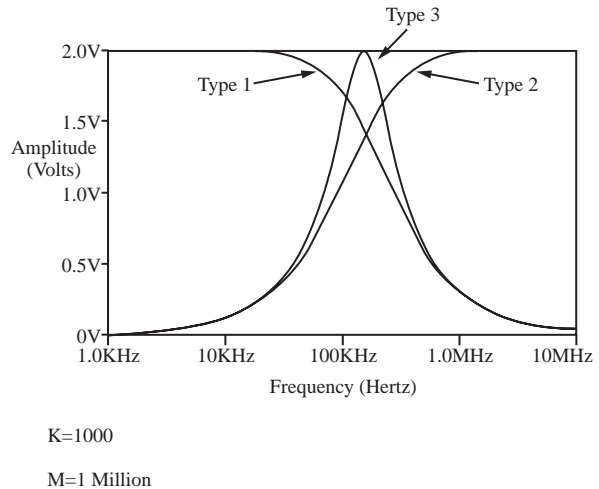
Experiment 2

A sine wave with an amplitude fixed at 2.0 volts was fed into a circuit with a type 3 filter, but in this experiment the researchers used four different values for the inductance (L). The resulting frequency response curves are shown in the following figure.
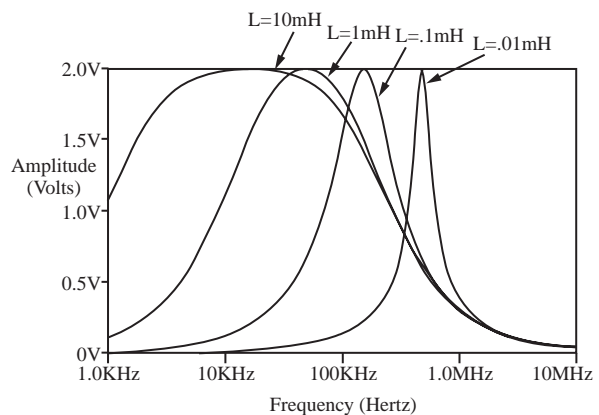
Experiment 3

Again, the researchers fed a sine wave with an amplitude fixed at 2.0 volts into a circuit with a type 3 filter. The inductance was held at 0.1mH, while four different values of capacitance C were used. The resulting frequency response curves are shown in the following figure.
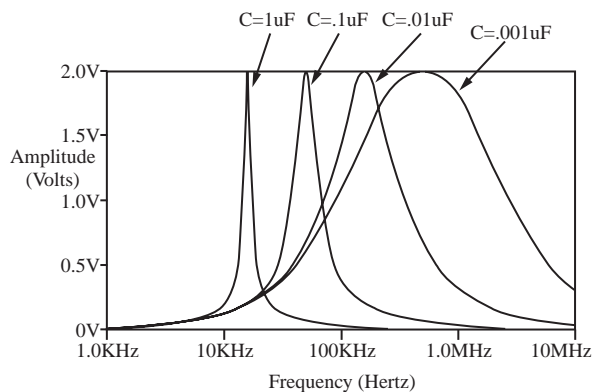
25. Which of the following was a control in all three experiments?

    A. Input frequency
    B. Input amplitude
    C. Inductance
    D. Capacitance

26. Using a type 3 filter and an inductance of 1mH, what is the approximate output amplitude at an input frequency of 100KHz?

    F. 1.9 volts
    G. 1.5 volts
    H. 1.0 volts
    J. 75 volts

27. Which of the following best explains why a type 3 filter was selected for experiments 2 and 3?

    A. The frequency response varied more widely when filter type 3 was used than when either Filter type 1 or Filter type 2 was used.
    B. Filter type 3 contains a ground and was therefore the safest of the three types of filters to experiment with.
    C. Filter type 3 is the only one among the three that contains an inductor.
    D. Input voltage could be more easily regulated using a type 3 filter than using either a type 1 or type 2 filter.

28. Increasing the inductance level for filter type 3 has the effect of:

    F. increasing the output amplitude of the electrical circuit.
    G. decreasing the average frequency of sine waves that pass through the circuit.
    H. reducing the range of sine-wave frequencies that pass through the circuit.
   J. increasing the output frequency of the electrical circuit.

29. Based on information given in the three experiments, which of the following can we assume to be true?

   A. The higher the capacitance, the wider the peak in the frequency response curve.

   B. The lower the capacitance, the narrower the peak in the frequency response curve.

   C. The higher the inductance, the narrower the peak in the frequency response curve.

   D. The higher the capacitance, the narrower the peak in the frequency response curve.

30. In the design of a radio receiver containing a type 3 filter, a low capacitance level and a high inductance level would be most useful for the purpose of:

   F. enhancing radio reception across the frequency spectrum.

   G. tuning out signals at high and low frequencies.

   H. tuning in a radio station at a fixed frequency.

   J. minimizing unwanted audio noise at middle frequencies.

Passage VI

Individuals usually have two copies of each gene (the basic unit of genetic material, found on the *chromosomes*), one from their mother and one from their father. Genetic or inherited diseases are those that can be passed down to the next generation through the genes. These diseases follow a number of patterns. Two of the basic ones are *dominant* and *recessive* inheritance.

    In a genetic disease with a recessive inheritance pattern, an individual will not be affected by the disease unless he or she is passed two copies of the disease gene, one from each parent. An individual who is passed one copy of the disease gene is called a *healthy carrier*. He or she will not have the disease, but can still pass the gene on to an offspring. Figure 1 shows a family with this type of genetic disease.

Figure 1
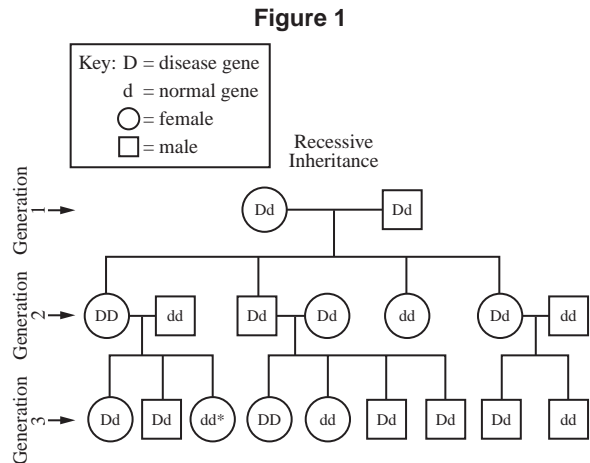
In a disease with a dominant inheritance pattern, any individual with a copy of the disease gene will have the disease. (Depending on the disease, individuals with two copies may have an accelerated or more severe disease course, or may be unable to survive.) There is no such thing as a healthy carrier with this type of disease. Figure 2 shows a family with this type of genetic disease.
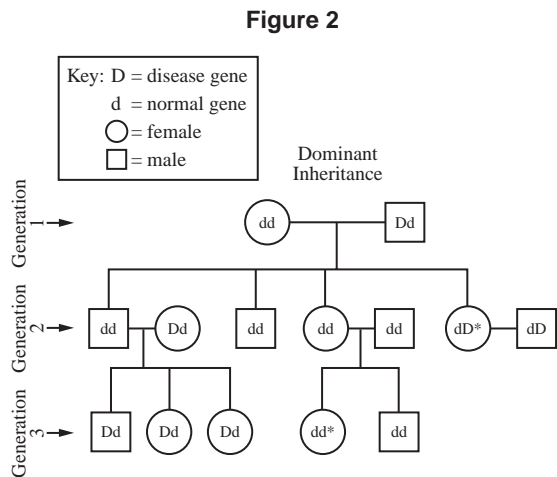
Figure 2

31. In Figure 1 on page 55, which shows a recessive inheritance pattern, which of the following about the parents of generation 2 is true?

    A. Neither parent was passed a copy of the disease gene.
    B. Both parents were passed two copies of the disease gene.
    C. Both parents were passed one copy of the disease gene.
    D. Neither parent is capable of passing the disease gene to the next generation.

32. With respect only to the individuals shown in Figure 1 on page 55, it CANNOT be true that a:

    F. child of a person without a copy of the disease gene has the disease.
    G. child of a person with the disease gene will never contract the disease.
    H. child of two healthy carriers has the disease.
    J. parent of a healthy carrier is also a healthy carrier.

33. In Figure 2 on page 55, what is the probability that the female marked with an asterisk in generation 3 will pass the disease on to her child?

    A. 0%
    B. 25%
    C. 50%
    D. It cannot be determined from the information given.

34. In Figure 2 on page 55, among all the children and grandchildren of the male and female at generation 1, how many have the disease?

    F. Three
    G. Four
    H. Six
    J. It cannot be determined from the information given.

35. Pamela is a young mother whose parents are both deceased. Assuming that disease X is a genetic disorder with either a dominant or a recessive inheritance pattern, which of the following statements is accurate?

    A. If neither of Pamela's parents ever had disease X, then Pamela does not and never will have disease X.
    B. If neither Pamela nor the father of Pamela's child has disease X, then that child will never have disease X.
    C. If both of Pamela's parents had at least one copy of the disease X gene, then Pamela also has at least one copy of the disease X gene.
    D. If neither of Pamela's parents ever had disease X, but Pamela has disease X, then disease X is not a dominantly inherited genetic disorder.

	Winter	Spring	Summer	Fall
Chemist: Seawater Salinity*/Temperature (°C) (Seasonal Average)				
Surface	0/−1°	25/1°	32/12°	15/2°
5 meters deep	0/−1°	29/5°	32/7°	26/7°
20 meters deep (ocean floor)	39/4°	32/5°	32/6°	34/5°
Biologist: Population Counts (Seasonal Average)				
Bay (free-swimming)				
Fur seals (number successfully hunted)	6.3	3.0	5.4	2.2
Salmon (tonnage caught)	0	122.5	1,152.6	4,259.5
Gray whales (number observed)	0	29.8	32.4	1.4
Bay (bottom-dwelling amphipods)				
Gammarus duebeni (sample count in one gallon of seawater)	50	25	15	60
Gammarus locusta (sample count in one gallon of seawater)				
Land species				
Kodiak Bears (number observed)	0	4	22	21
Humans (number counted)	63	66	85	117
Doctor: Number of Medical Complaints (Seasonal Average)				
Dehydration-related illnesses	0.0	0.0	3.4	0.9
Bear attacks	0.0	0.2	1.1	2.2
Protein deficiency-related illnesses	10.4	4.1	1.0	0.0

Passage VII

A chemist, a biologist, and a doctor spent several years studying and measuring their respective populations in an Alaskan fishing community. Some of their observations are recorded above.

36. Which of the following statement about the water in the bay does the chemist's salinity and temperature readings best support?

F. The deeper the water, the lower the temperature.

G. The greater the water temperature, the higher the salinity.

H. The shallower the water, the lower the salinity.

J. The lower the water temperature, the lower the salinity.

37. An animal species is said to be thriving if its population is increasing. Assuming that free-swimming water animals are generally found at the surface or within 5 meters from the surface of the bay's waters, the chemist's and the biologist's measurements provide some support for all of the following hypotheses EXCEPT:

   A. fur seals thrive as water temperatures decrease.
   B. gray whales thrive as salinity levels increase.
   C. gray whales thrive as water temperatures increase.
   D. salmon thrive as salinity levels increase.

38. Among the following, which is LEAST likely to be a contributing cause of the protein deficiency-related diseases observed by the doctor?

   F. The local human population depends primarily on seal meat for their protein consumption.
   G. Virtually all of the bay's salmon are caught by commercial fishermen who transport the salmon elsewhere for sale.
   H. It is difficult to catch a gray whale in waters hidden beneath ice.
   J. Local religious customs prohibit the consumption of bear meat unless the meat is fresh.

39. Which of the following statements is best supported by the evidence?

   A. *Gammarus locusta* are more sensitive to salinity changes than *gammarus duebent.*
   B. *Gammarus locusta* and *gammarus duebent* are equally sensitive to water temperature changes.
   C. *Gammarus duebent* are more sensitive to water temperature changes than *gammarus locusta.*
   D. *Gammarus locusta* are more sensitive to salinity changes but less sensitive to water temperature changes than *gammarus duebent.*

40. The doctor wants to reduce the number of protein deficiency-related illnesses among the village's human population. Which of the following would probably be the doctor's best course of action?

   F. Stock the bay with more salmon to compensate for the absence of gray whales during the winter.
   G. Introduce methods of preserving meat and fish for later consumption.
   H. Remove the bears from the area to reduce the local villagers' competition for food.
   J. Introduce modern fishing methods to the local fishermen.

Answers
and Explanations

English

1. A The original phrasing is a proper way to express the idea of a choir consisting of girls but no boys. In choice **B**, *only* and *just* are redundant. Choice **C** is confusing, while choice **D** uses *and* where *but* would be appropriate.

2. J The idiom *for every (one) . . . there are (ten)* is perfectly appropriate here. However, the word *boys'* sounds awkward without the word *choirs* after it. Choice **J** supplies this word and adds the word *either*, which makes the sentence's meaning even clearer.

3. A The underlined phrase is grammatically correct and clearly conveys the idea that the Boys Choir already existed in 1977, when the Girls Choir was founded.

4. H The present-perfect tense should be used here, to match the clause following the comma and because the time frame involves not just the past but also the present.

5. D The phrase *since 1968* should be set off because the sentence can stand alone without it. One way to set off the phrase is with parentheses.

6. G If you read the sentence as a whole, you see that it lists two distinct performances. Each one should receive similar grammatical and rhetorical emphasis. But, the underlined portion subordinates the first clause to what follows the comma. Choice **G** fixes the problem.

7. D In the original sentence, the phrase *they sung* awkwardly splits the description of the location. Also, the phrase *in front* is used twice in the description, which sounds repetitive. Choice **D** solves both problems.

8. F At the end of the preceding paragraph, the writer notes two of the grand venues where the Boys Choir has performed. The sentence in choice **F** alludes to that point while deftly transitioning to the discussion of the Girls Choir that follows.

9. B A choir is said to perform either *to*, *in front of*, or *before* an audience, not *toward* or *at* an audience. Choice **B** provides one of the idioms that works here.

10. G Without a comma between the two underlined words, the sentence suggests that the thousands of music lovers were also dignitaries, which in all likelihood is not what the writer intended to suggest. Choice **G** supplies the comma that sets off *the mayor's wife*, identifying her (but not the music lovers) as one of the dignitaries.

11. C If you switch the sentence's two clauses, you can see that the sentence boils down to this: The choirs act as havens *by giving* kids new confidence and hope.

12. F The preceding sentence indicates that the school strongly emphasizes singing, while the following sentences suggest that the school sparks student interest in various non-music professional careers. Choice **F** provides a nice transition from one idea to the other.

13. C As it stands, the sentence contradicts itself. The writer is trying to say that these jobs now appear in reach, whereas earlier they seemed out of reach—as choice **C** indicates.

14. J The underlined portion refers to the Girls Choir, not to its performances. It's inappropriate to talk about a choir as either being canceled, choice **F**, or closing its doors, choice **G**. On the other hand, it makes perfect sense to say that a choir might *go silent* without sufficient funding. Although the phrase *stop what they do* also makes sense, *go silent* is a more artful, graceful phrase.

15. C The writer has been asked to describe the choir's musical achievements. The essay explains a bit about the choir's history and its importance in the lives of its members, but it really doesn't describe their musical achievements.

16. J The correct idiomatic expression here is *waiting to see*.

17. C The clause following the underlined portion elucidates, or explains, what is meant by the trap described in the first part of the sentence. A dash, and not a colon, is the appropriate mark for this purpose. (A comma would also be appropriate.) The pronoun *them* is correct here because it refers to the plural noun *technologies*.

18. F The phrase *he or she* is singular, matching the singular subject *leader*. Choices **G** and **J** are wrong because they use plural noun forms. Choice **H** is awkward and confusing.

19. B The purpose of the sentence in which the underlined portion appears is to underscore and support the idea in the previous sentence. The connecting phrase that choice **B** provides (*In fact,*) helps the reader understand the connection between the two sentences.

20. J In this sentence, the first clause and the second clause (following the comma) both employ the past-perfect tense. The result is that it's impossible to tell which event came first—the one described in the first clause or the one described in the second clause. Only choice **J** clears up the ambiguity.

21. B The adverb *seemingly* should not be separated from the adjective it modifies (*unassailable*). One way to fix this problem is to simply reverse the words *seemingly* and *was*. Another way is to replace the underlined phrase with the one that choice **B** provides.

22. G The underlined sentence would be the ideal topic sentence for Paragraph 3 and therefore should begin that paragraph rather than end Paragraph 2.

23. D The simple past tense (*became*) makes the most sense here in light of the next two sentences, which provide details—using the simple past tense—about the development described in the first sentence.

24. F The reflexive verb *itself* is appropriately used here to indicate how Wang survived. Choice **J** retains the reflexive *itself*, but the use of the infinitive *to transform* distorts the meaning of the sentence.

25. **A** The underlined clause clearly and properly modifies *computer company* and is grammatically correct. Choice **B** is an awkward juxtaposition of *company* and *a company*. Choice **C** contains a pronoun reference problem: To what does the noun *their* refer—Wang or the companies Wang served? Choice **D** is very awkward.

26. **H** The phrase *slip up* is slang and does not fit the overall style of this essay. Of the three alternatives, choice **H** makes the most sense in the context of the entire sentence.

27. **C** The underlined portion is unnecessarily wordy; choice **C** provides the same idea, but more concisely.

28. **F** The sentence in choice **F** explains why Wang had lost its chance to move forward, fleshing out the point the writer makes in the previous sentence.

29. **B** The underlined phrase is an awkward way of saying that well-managed companies sometimes fail for the reason cited in the sentence. Choice **B** provides a clearer way of making the point.

30. **J** Each of the two paragraphs—1 and 5—makes either a suitable introductory or concluding paragraph for this essay. However, Paragraph 5 provides a far more effective transition to Paragraph 2. Thus, the essay would be more effective if Paragraphs 1 and 5 were switched.

31. **C** The word *like* is improperly used here; the writer is not seeking to compare learning the oboe to the experience of expecting. Choice **C** provides the correct idiom. Choice **B** and **D** are correct in usage and grammar, but neither is so effective as choice **C**.

32. **F** The colon is correctly used here to signal that what's ahead essentially defines what was just described.

33. **B** The underlined portion employs the passive voice, which is very awkward and confusing here. Choice **B** recasts the clause in the active voice.

34. **G** In the two sentences, there's a contrast of ideas that the writer seeks but fails to convey. Choice **G** supplies a connecting word that points out that contrast effectively.

35. **D** What follows *either* should parallel what follows *or*, but it doesn't (*their teachers* and *from mail order companies* are not grammatically parallel). Choice **D** fixes the faulty parallelism. Choice **B** also fixes the problem, but it isn't as precise as choice **D**.

36. **G** The word *that* is needed between *is* and *there's* to transform the portion of the sentence beginning with *there's no such thing* into a dependent clause. (*The problem is that there's. . . .*)

37. **A** The point of the sentence that immediately precedes the proposed remark is that oboe reeds are very expensive. Choice **A** provides objective, direct support for that point. It also relates directly to the next sentence. (Both sentences involve a problem with purchasing reeds by mail order.)

38. **H** The underlined phrase—*For example*—contributes nothing to the sentence. However, simply omitting the phrase isn't so effective as replacing it with the phrase *In fact*, which connects the ideas in the two sentences together by underscoring the point that reed makers take their time sending reeds to their customers.

39. **B** The plural pronoun *them* should be used instead of the singular form *it* because the writer is referring here to the plural noun *reeds*.

40. J The word *progressively* already conveys the idea that the quality of the reeds worsened in a series of steps. Repeating the word *lower* is unnecessary. Choice **G** fails to eliminate the redundancy, while choice **H** supplies the adjective *poor* where the comparative form (*poorer*) would be needed.

41. D The contraction *they're* (they are) makes no sense here, and should be replaced with *its*, which matches the singular *source* used elsewhere in the sentence to refer to the company in California.

42. G The juxtaposition of the modifier *Desperate* and the sentence's subject (*the next person*) implies that it was the next person who was desperate, when in fact it was the writer who was desperate. Choice **G** solves this misplaced-modifier problem by reconstructing the main clause, positioning *I* (the writer) immediately after the modifier, as the sentence's subject. The clause in choice **J** accomplishes the same thing, but the position of the word *next* creates confusion. (To whom or what does *next* refer?)

43. C The word *however* makes for an illogical and confusing connection between the last sentence of Paragraph 5 and the first sentence of Paragraph 6. Without the word *however*, the transition is smooth and logical.

44. J In the original sentence, the pronoun reference is ambiguous. (Does *him* refer to the friend or the reed maker?) Choice **J** replaces the pronoun with the noun to which the writer probably intends to refer (*my friend*). Although choice **H** also eliminates the ambiguity, it sounds awkward at this point in the sentence.

45. A The writer's persistence in searching for good reeds, along with the enjoyment the writer indicated he gets out of playing the oboe, strongly supports the idea that the writer does not plan to give up. The sentence in choice **A** is consistent with this idea and nicely ties together all the information in the essay. Neither choice **B** nor choice **C** is so successful in embracing the entire essay. Choice **D** does nothing more than essentially repeat one of the statements in Paragraph 1 and thus is less effective than choice **A**, which provides an additional insight: the writer's evaluation of the whole experience.

46. H The purpose of the underlined clause is to identify the specific time of autumn that the events described later in the sentence occur. Choice **H** makes it clear that the writer is concerned only with Thanksgiving, and not with autumn generally.

47. B The two phrases *to host friends . . .* and *preparing one of the . . .* are not grammatically parallel. One solution is to replace the infinitive *to host* with the gerund *hosting*—as choice **B** provides.

48. J A comma is needed here to separate the two distinct tasks discussed in the sentence. The word *and* following the comma is optional.

49. C The underlined portion contains the awkward and vague phrase *there is*. Also, the article *a*, although acceptable here, is best omitted because the list that follows contains both plural and singular nouns. Choice **C** solves both problems and is consistent with the rest of the paragraph, in which the writer uses the second-person *you*.

50. G The passive voice is used in the underlined portion, but the active voice is used throughout the rest of the sentence. Choice **G** recasts the phrase in the active voice, thereby avoiding the awkward shift from active to passive voice, then back to active voice.

51. A The writer uses the idiom *by comparison to* appropriately and effectively here. Choice **B** is acceptable, but it is not as concise as the original version.

52. H The underlined portion is grammatically correct but leaves it a bit unclear as to who enjoyed the meal. Choice **H** makes it clearer that it was the Pilgrims who enjoyed the meal.

53. B If commas were used in the place of semicolons, it would be difficult to distinguish between categories such as fowl and seafood.

54. H With the past tense *wasn't*, either the underlined phrase or choices **G** or **J** would be correct. But, the verb form *weren't* (were not) establishes the subjunctive mood, which calls for an idiom such as *As if.*

55. A The writer has chosen a phrase here that is idiomatic and, by way of its style and structure, very effective in making the point that the Pilgrims' Thanksgiving meal carried on much, much longer than the typical modern-day Thanksgiving dinner.

56. J At the end of the first paragraph, the essay indicates that there were significant differences between the Pilgrims' Thanksgiving and today's typical Thanksgiving. Then, the essay's second paragraph begins with the following sentence: *First, consider the menu.* This sentence is a clue that another major difference will be discussed later in the essay. In the paragraph at hand, the essay finally turns from the menu to another aspect of Thanksgiving dinner: the guest list. Choice **J** provides a sentence that signals the transition from one to the other.

57. D Adding a word such as *total* helps underscore the point that the guest list includes not just immediate family but extended family as well. However, the underlined portion is awkward and should be replaced with either *total guests* or *guests altogether*, as choice **D** provides.

58. G The first part of Paragraph 4 (preceding the underlined sentence) notes the many guests who show up at today's typical Thanksgiving dinner, while the portion of the paragraph following the underlined sentence notes how many more guests there were at the first Thanksgiving. The sentence in choice **G** deftly links the two ideas.

59. C The indirect object of *invite* is the phrase *to a little pot-luck supper.* (Squanto invited Massasoit to a pot-luck supper.) For clarity, these two elements should be placed nearer to each other. Choice **C** fixes the problem.

60. F The concluding remark should underscore the essay's main idea—that the first Thanksgiving was a much greater feat than today's typical Thanksgiving—as well as tying together both main areas of discussion: the extensive menu and the number of guests. Only choice **F** accomplishes all this.

61. D Although replacing *movies* with the possessive *movies'* (as in *their* movies) would correct the underlined portion's only grammatical error, the phrase is still awkward. Choice **D** provides a clearer, more idiomatic alternative.

62. H Since the sentence involves past events, you can eliminate choices **F** and **J**, each of which uses the present-tense verb form *is.* Choice **H** fixes the error by replacing *is* with the past-tense form of the verb *lies.* (It is idiomatic to say that the greatness of something *lies in* a certain characteristic of that thing.)

63. B In the original sentence, *emerged* separates the sentence's subject (*a generation of filmmakers*) from its modifier *who were not.* . . . Choice **B** fixes the problem by reconstructing the underlined portion.

64. J In the original sentence, *no other* and *with the exception of* are redundant. Choices **H** and **J** both solve the problem, but choice **J** is clearer and more concise than choice **H**.

65. C Paragraph 1 ends by indicating one reason for the vitality and excitement surrounding the early days of moviemaking. Paragraph 2 takes up a second reason. The word *Furthermore* signals that another reason is coming, so it provides a good link between the two paragraphs.

66. F The sentence employs the idiomatic correlative pair *not for* . . . *but rather for.* . . . What follows *not only* is grammatically parallel to what follows *but rather for*.

67. B The passive voice sounds awkward here. Choice **B**, which employs the active voice, sounds more graceful.

68. J The connecting word *and* would be correct here only if what followed it were an independent clause. But, it's a dependent clause. (Notice the use of the gerund *running* rather than *are running* or *run*.). The preposition *with* renders the sentence grammatically correct.

69. C The word *more* is already supplied—immediately preceding the series of three adjectives—so, all that's needed here is the word *stale*.

70. J Sentence 3 refers to the phenomenon described in sentence 1 and thus should immediately follow that sentence. Sentences 2 and 4 provide details that support the assertion in sentence 3, so they should follow sentence 3. Sentences 2 and 4 might work in either order, but choice **J** is the only one in which the sentences are otherwise arranged correctly.

71. B The underlined word is grammatically correct here. The problem is that the sentence doesn't make its point effectively. Adding the word *only* is needed to make the point that the artist whose audience is limited to the elite need not be concerned with satisfying the tastes of a wide variety of people.

72. G In the preceding sentence, the writer points out what strong painters can do. In the sentence at hand, the writer seeks to compare great artists of the cinema to these painters. Choice **G** provides a phrase that makes it clear that the comparison is being made.

73. C From the paragraph's first two sentences, you can infer that artists such as the ones listed were able to create films that were uncompromising in their artistry because they were not pressured to appeal to the masses. To link this idea to the following sentence, this point should be made explicit, which is precisely what the sentence in choice **C** accomplishes.

74. F The writer uses the parallel construction *The larger* . . . *the greater.* . . , which is idiomatic and perfectly appropriate for conveying the idea here.

75. A Since Paragraph 3 offers a conclusion based on the existence of financial pressures in today's movie industry, it's logical to put that paragraph after paragraph 4, in which those pressures are described.

Math

1. **B** To find the solution, divide 40.5 by 1,000 by moving the decimal point 3 places to the left.

2. **J** You can solve the problem algebraically as follows:

$$23 - x = 2(15 - x)$$
$$23 - x = 30 - 2x$$
$$x = 7$$

An alternative method is to subtract the number given in each answer choice, in turn, from both Lyle's age and Melanie's age.

3. **D** $4 \times 4 \times 4 = 64$, and $5 \times 5 \times 5 = 125$. Thus, x must lie between 4 and 5.

4. **G** The first coordinate in the (x,y) pair $(4,-5)$ is the point's horizontal position (along the x-axis), while the second coordinate in the pair is the point's vertical position (along the y-axis). Point Q matches both coordinates.

5. **B** The price of two children's tickets together equals the price of one adult ticket. The total admission price is therefore equivalent to the price of three adult tickets.

$$3a = \$12.60$$
$$a = \$4.20$$

Child's ticket price $= \dfrac{1}{2}(\$4.20) = \$2.10$

6. **J** Of six marbles altogether, two are blue. Hence, the chances of drawing a blue marble are 2 in 6, or 1 in 3, which can be expressed as the fraction $\dfrac{1}{3}$.

7. **D** Given that point D bisects $\overline{BA}$, the length of $\overline{AD}$ must be equal to the length of $\overline{DB}$, as shown in this figure:

8. **K** Cross-multiply to solve for y:

$$(9)(y - 1) = (2y)(3)$$
$$9y - 9 = 6y$$
$$3y = 9$$
$$y = 3$$

9. **C** Your first step is to rename mixed numbers as fractions:

$$\frac{9}{2} + \frac{15}{4} - \frac{12}{5}$$

The least common denominator is 20. You can eliminate answer choice **D**. Rename each fraction, then combine:

$$\frac{9}{2} + \frac{15}{4} - \frac{12}{5} = \frac{90 + 75 - 48}{20} = \frac{117}{20}$$

10. J $ab^2c = (3)(9)\left(\dfrac{1}{3}\right) = \dfrac{27}{3} = 9$

11. A Rewrite the question as an algebraic equation, and solve for x:

$$M = \dfrac{P}{100}(x)$$

$$100M = Px$$

$$\dfrac{100M}{P} = x$$

12. J The sum of the measures of any triangle's interior angles is 180°. Accordingly, the third interior angle of the triangle with angles measuring 30° and 75° measures 75°. Since the quadrilateral formed by the two pairs of parallel lines is a parallelogram, the vertex opposite that 75° angle also measures 75°. Since $\angle x$ is the supplement of that 75° angle, $\angle x$ measures 105°.

13. C You can express the amount of sugar after you add water as $0.05(60 + x)$, where $0.05 = 5\%$ and $(60 + x)$ represents the total amount of solution after you add the additional water.

14. J Points $(5, -2)$ and $(-3, 3)$ are two points on line b. The slope of b is the change in the y-coordinates divided by the corresponding change in the x-coordinate:

$$m_b = \dfrac{3 - (-2)}{-3 - 5} = \dfrac{5}{-8}, \text{ or } -\dfrac{5}{8}$$

15. A Applying the midpoint formula, the coordinates of M are $\left(\dfrac{4 + 2}{2}, \dfrac{4 + 2}{2}\right)$, or $(3, 3)$. The triangle's height and base are both 3, and its area $= \dfrac{1}{2}bh = \dfrac{1}{2}(3)(3) = 4.5$.

16. G Equate the proportions of the negative with those of the printed picture:

$$\dfrac{2\frac{1}{2}}{4} = \dfrac{1\frac{7}{8}}{x}$$

$$\dfrac{\frac{5}{2}}{4} = \dfrac{\frac{15}{8}}{x}$$

$$\dfrac{5}{2}x = \dfrac{15}{2}$$

$$5x = 15$$

$$x = 3$$

17. E Put the equation given in the question into the form $y = mx + b$:

$$4x - 2y = 6$$
$$2y = 4x - 6$$
$$y = 2x - 3$$

The line's slope (m) is 2. Accordingly, the slope of a line perpendicular to this line is $-\frac{1}{2}$.

Given a y-intercept of 3, the equation of the perpendicular line is $y = -\frac{1}{2}x + 3$. Reworking this equation to match the form of the answer choices yields $2y + x = 6$.

18. J Before 4 socks were removed, the drawer contained 24 blue socks ($60 \times 40\% = 24$) and 36 gray socks ($24 + 36 = 60$.) After removing 4 blue socks, the drawer contained 20 blue socks and 36 gray socks. The ratio of gray to blue socks is 36:20, or 9:5.

19. D To determine the distance between the two points, apply the distance formula:

$$d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$$
$$= \sqrt{(5 - 1)^2 + (4 - [-2])^2}$$
$$= \sqrt{4^2 + 6^2}$$
$$= \sqrt{52}, \text{ or } 2\sqrt{13}$$

20. G Set each of the four expressions, in turn, equal to 0, then solve for x in each equation. Given $2x = 0$, $x = 0$. Given $3x - 1 = 0$, $x = \frac{1}{3}$. Given $2x - 2 = 0$, $x = 1$. Given $x - 3 = 0$, $x = 3$.

The solution set, then, contains 0, $\frac{1}{3}$, 1, and 3.

21. A The graph shows all x-values less than -1.5 and all x-values greater than 1.5. Choice **A** describes all x-values.

22. H Combine the terms under the radical into one fraction:

$$\sqrt{\frac{y^2}{2} - \frac{y^2}{18}} = \sqrt{\frac{9y^2 - y^2}{18}}$$
$$= \sqrt{\frac{8y^2}{18}}$$
$$= \sqrt{\frac{4y^2}{9}}$$

Then factor out "perfect squares" from both numerator and denominator:

$$\sqrt{\frac{4y^2}{9}} = \frac{2y}{3}$$

23. A Add the two equations:

$$x + y = a$$
$$\underline{x - y = b}$$
$$2x + 0 = a + b$$
$$x = \frac{1}{2}(a + b)$$

24. K Given that the equation has only one solution, the two binomial factors of the trinomial $x^2 + 8x + s = 0$ must be the same: $\left(x + \sqrt{s}\right)$. Rewrite in unfactored form:

$$\left(x + \sqrt{s}\right)\left(x + \sqrt{s}\right) = 0$$
$$x^2 + \left(2\sqrt{s}\right)x + s = 0$$

$2\sqrt{s} = 8$. Therefore, $\sqrt{s} = 4$, and $s = 16$.

25. C Apply the formula for the equation of a circle: $(x - h)^2 + (y - k)^2 = r^2$. Given that the circle's center (h,k) is $(3,-1)$, its radius (r) is 5, and the y-coordinate of one point on the circle is 2, you can solve for x (m) as follows:

$$(m - 3)^2 + \left(2 - [-1]\right)^2 = 5^2$$
$$(m - 3)^2 + 9 = 25$$
$$(m - 3)^2 = 16$$
$$m - 3 = \pm 4$$
$$m = 7, -1$$

One of these two values, -1, appears among the answer choices.

26. K The triangle's three sides are in the ratio 8:15:17, which is one of the Pythagorean side triplets ($8^2 + 15^2 = 17^2$). Thus, the triangle must be a right triangle in which the two shortest sides form the right (90°) angle.

27. C To determine the answer quantity, work systematically, beginning with the greatest possible integer:

$$7 + 1 + 1 + 1 = 10$$
$$5 + 3 + 1 + 1 = 10$$
$$3 + 3 + 3 + 1 = 10$$

As you can see, there are three different ways.

28. K Letting x = the unknown length, by the Pythagorean theorem: $13^2 + x^2 = 39^2$. Solving for x:

$$x^2 = 39^2 - 13^2$$

$$x = \sqrt{39^2 - 13^2}$$

$$= \sqrt{(13)^2(3)^2 - 13^2}$$

$$= \sqrt{13^2(3^2 - 1)}$$

$$= 13\sqrt{8}$$

$$= 26\sqrt{2}$$

29. D Given that the average of the first five numbers is A, their sum must be $5A$. Thus, the sum of all six numbers is $5A + n$. To find the average of all six numbers, divide their sum by the number of terms (6): $\dfrac{5A + n}{6}$.

30. F The sum of the lengths of any two sides of a triangle must be greater than the length of the third side. Thus, in the triangle at hand, the length of the third side must be less than 15 inches.

31. B You're looking for the point at which the dotted line (ABC's stock price) is furthest above the solid line (XYZ's stock price). The dotted line lies above the solid line only during the second half of the 2nd quarter and the first half of the 3rd quarter; the end of the 2nd quarter marks the greatest difference between prices during that period. At that time, ABC stock was priced at approximately $7.60, while XYZ stock was priced at approximately $5 per share. The difference between those two prices is $2.60.

32. F Solve this problem using the rules for signs and with a bit of logical reasoning. Using negative integers approaching zero (0) will yield the least product. Start with -1, then decrease the values of x and y if necessary. The first two values that satisfy the equation are: $y = -2$, $x = -1$ [$-1 - (-2) = 1$]. Accordingly, $xy = 2$.

33. E Square both sides of the equation, then solve for x: $4x = y$; $x = \dfrac{y}{4}$

34. G The question provides the formula: *distance* = *rate* × *time*. The boat's total distance = $m + 20$, while its total traveling time = $t + 4$. Accordingly:

$$m + 20 = (r)(t + 4)$$

$$\frac{m + 20}{t + 4} = r$$

35. B Quadrilateral *ABCD* is a parallelogram. In any parallelogram, opposite vertices have the same angle measures. Thus, $m\angle DAB = 60°$. The sum of the measures of the 3 interior angles of $\triangle ABD = 180°$. Thus, $m\angle ABD = 45°$.

36. K If you multiply the second equation by 4, and then isolate the m-term, this reveals that the two equations are the same:

$$4\left(\frac{3}{4}n\right) = 4(3 - m)$$

$$3n = 12 - 4m$$

$$4m = 12 - 3n$$

Given one linear equation in two variables, there are an infinite number of possible values for each variable.

37. C First, multiply matrix A by the scalar 2. To do so, multiply each term in matrix A by 2:

$$2A = \begin{bmatrix} -3 & 5 \\ 3 & 7 \end{bmatrix} = \begin{bmatrix} -6 & 10 \\ 6 & 14 \end{bmatrix}$$

Then, subtract matrix B from matrix $2A$. To do so, subtract each term in matrix B by the corresponding term in matrix $2A$:

$$2A - B = \begin{bmatrix} -6 & 10 \\ 6 & 14 \end{bmatrix} - \begin{bmatrix} 3 & 2 \\ -1 & 1 \end{bmatrix}$$

$$= \begin{bmatrix} -9 & 8 \\ 7 & 13 \end{bmatrix}$$

38. G Each successive term is 3 less than the preceding term. Here's the sequence of ten terms: {30, 27, 24, 21, 18, 15, 12, 9, 6, 3}. Including the first term (30), the tenth term in the sequence is 3.

39. C $2g(M) = 2\log_6 M = \log_6 M^2$. Hence, $f(2(g(M)) = M^2$.

40. K $\triangle QRS$ is a right triangle in which the length of the sides are in the ratio 3:4:5. The length of $\overline{RS}$ (the hypotenuse) is 5 units. Given that $\overline{ST}$ is also 5 units long, $\triangle RST$ is an isosceles right triangle, in which the length of the sides are in the ratio $1:1:\sqrt{2}$. The length of $\overline{RT}$ (the hypotenuse) must be $5\sqrt{2}$ units.

41. D Competitor 1 must engage in 5 matches. Competitor 2 must engage in 4 matches not already accounted for. (The match between competitors 1 and 2 has already been tabulated.) Similarly, competitor 3 must engage in 3 matches other than those accounted for, and so on. The minimum number of total matches $= 5 + 4 + 3 + 2 + 1 = 15$.

42. G The length of each side of the square is 12 feet. The length of the remaining two sides of the triangle totals 16 feet. The perimeter of the semicircle $= \frac{1}{2}\pi d = \frac{1}{2}\pi(12) = 6\pi$. The length of the two sides of the square included in the overall perimeter totals 24. The total perimeter of the floor $= 16 + 6\pi + 24 = 40 + 6\pi$.

43. D For any right triangle, by definition, the tangent of one acute angle is the reciprocal of the tangent of the other acute angle. Thus, their product is 1.

44. J In 3 hours, one ship traveled 72 miles, while the other traveled 30 miles. The ratio of these two distances is 30:72 or 5:12, suggesting a 5:12:13 triangle in which the hypotenuse is the distance between the two ships at 2:30 p.m. That distance is 78 miles.

45. C $\overline{AC}$ is a diagonal of the square $ABCD$. To find the length of any square's diagonal, multiply the length of any side by $\sqrt{2}$. So first you need to find the length of a side here. Half the length of a side equals the circle's radius, and the perimeter of any circle equals $2\pi r$, where r is the radius. Thus, the radius here is 8, and the length of each of the square's sides is 16. Therefore, diagonal $AC = 16\sqrt{2}$.

46. K The square root of (3)(12), or 36, = 6. However, since $\sqrt{3x} = 6i$ rather than 6, $x = -12$.

47. C Factor the numerator and the denominator. (The numerator provides a difference of two squares.) Simplify, then distribute the resulting denominator to both terms in the numerator:

$$\frac{x^2 - 4}{x^2 - 2x} = \frac{(x + 2)(x - 2)}{x(x - 2)}$$

$$= \frac{x + 2}{x}$$

$$= \frac{x}{x} + \frac{2}{x}$$

$$= 1 + \frac{2}{x}$$

48. K Your task is to determine the least common multiple of all three numbers. The least number of days until events A, B, and C all occur again on the same day is the product of the three numbers (3, 5, and 8), which is 120.

49. D The figure shows a hexagon. The sum of the measures of the six angles = 720°. Subtracting the three known angles from 720 leaves 420°, which is the sum of the measures of the three unknown angles. Set up an equation, then solve for x:

$$x + x + \frac{4}{5}x = 420$$

$$\frac{14}{5}x = 420$$

$$x = (420)\frac{5}{14} = (30)(5) = 150$$

50. G First, express the equation in the quadratic form: ($x^2 + 4x + 2 = 0$) [$a = 1$, $b = 4$, $c = 2$]. Then, apply the quadratic formula:

$$x = \frac{-4 \pm \sqrt{4^2 - 4(1)(2)}}{2(1)}$$

$$= \frac{-4 \pm \sqrt{8}}{2}$$

$$= \frac{-4 \pm 2\sqrt{2}}{2}$$

$$= \frac{-4}{2} \pm \frac{2\sqrt{2}}{2}$$

$$= -2 \pm \sqrt{2}$$

51. E First, determine the length of each edge of the cube: $\sqrt[3]{125} = 5$. The surface area of each square face of the cube $= 5 \times 5 = 25$.

52. K After 4 hours, the clock will run behind the actual time by 16 minutes. Accordingly, at 4:00 the clock will show 3:44. It will take 16 minutes *plus* about one additional minute (because the clock runs 1 minute slow every quarter-hour) for the clock to advance to 4:00.

53. D The graph shows a vertically oriented parabola. Thus, the general form for parabola's equation is $y - k = a(x - h)^2$. Since the vertex is at (3,0), $h = 3$ and $k = 0$, and the parabola's equation is $y = a(x - 3)^2$. Each answer choice expresses an equation in unfactored form. Accordingly, rewrite the equation $y = a(x - 3)^2$ in the same manner (to identify the best equation among the five choices, you don't need to know the value of a, which defines the parabola's "width"):

$$y = (x - 3)(x - 3)$$
$$y = x^2 - 6x + 9$$

54. J Letting $x =$ the length of one side of the painting, the painting's area $= x^2$, and the entire area, including the picture and mat, is $(x + 2)^2$. The difference is the area of the mat. Thus:

$$(x + 2)^2 - x^2 = 60$$
$$x^2 + 4x + 4 - x^2 = 60$$
$$4x = 56$$
$$x = 14$$

55. A The area of any triangle $= \frac{1}{2}ba$, where b is its base and a is its altitude. In the triangle in question, $b = a$. Substitute this value for b in the area formula:

$$A = \left(\frac{1}{2}\right)(b)(b) = \frac{b^2}{2}$$

56. F The denominator $|y - 2|$, and hence the value of x, is always positive, even for negative y-values. The graph of the equation is asymptotic at $y = 2$, just like the original equation. Choice **A** provides the appropriate graph.

57. B In ΔPQR, $\tan x = \dfrac{\overline{QR}}{\overline{PQ}}$. Given $\tan x > 1$, $\overline{PQ} < \overline{QR}$ and, accordingly, $y < x$. Since the sum of x and y must be 90, $x > 45$ and $y < 45$—which choice **B** contradicts. Each of the other four choices must be *true*.

58. K As you can see from the figure below, letting $x = $ half the length of the base, $\sin 16° = \dfrac{x}{3}$; $x = 3\sin 16°$; and the length of the entire base $= 6\sin 16°$.
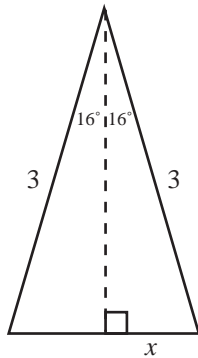
59. C In choice **C**, unequal quantities are subtracted from equal quantities. The differences are unequal, but the inequality is reversed because unequal numbers are being subtracted from rather than added to the equal numbers.

60. H The standard form for the equation of a cosine curve is $y = A\cos kx$, where A is the curve's amplitude. The value of A in the given equation is 2.

Reading

1. D In lines 12–17, Bertha describes her feeling of bliss as swallowing the afternoon sun and it sending a shower of sparks through her whole body—a description that is clear evidence of an imaginative mind. [Eliminate choice **A**.] Later in the passage, Bertha demonstrates affection toward her baby. We are informed in line 55 that Bertha wanted to question the Nanny's judgment, but "she did not dare to." This line indicates her timid nature. However, nowhere in the passage does either the narrator or Bertha herself suggest that Bertha is arrogant.

2. H Upon seeing Bertha arrive at the nursery, Nanny "set her lips in a way that Bertha knew, and that meant she had come into the nursery at another wrong moment." It is reasonable to infer that Nanny dislikes Bertha's visits to the nursery during certain times.

3. C In the paragraph preceding the use of the metaphor, we are told that "although Bertha Young was thirty," she had youthful emotions that she cannot express by such means as "dancing steps on and off the pavement." From this, we can infer that people of a certain age are expected to follow a certain code of behavior by not doing what they feel like doing.

4. F Nanny tells Bertha (in lines 76–78) that Bertha unthinkingly excites the baby, conveniently leaving Nanny to deal with the consequences. From this statement, we can surmise that Nanny considers Bertha a thoughtless person. By Nanny's repeated admonitions to Bertha about the baby's care, we can infer that she would agree that Bertha is inexperienced as a mother.

5. C We know from the details in the passage that Nanny feeds, bathes and grooms the baby, and also takes her out to the park. So, she no doubt considers herself the baby's primary caregiver. Even when Bertha occasionally visits with the baby, Nanny tries to treat Bertha as merely a "visitor"—by criticizing Bertha's behavior vis-a-vis the baby.

6. J The use of the word "absurd" is explained in the sentence that follows, where Bertha (through the narrator) questions the point of having a baby if "it has to be kept . . . in another woman's arms."

7. B Bertha stands watching Nanny with Bertha's baby. Bertha wishes she could be in Nanny's place, taking care of her baby herself. In this way, Bertha is like a poor little girl who wishes she had the doll that she sees the rich girl with, but she cannot afford it.

8. J The passage provides ample evidence of Nanny's possessive nature—for example, the use of "my" lovey (line 40) and the last sentence of the passage, in which we are told that Nanny came back into the nursery and seized "*her* Little B."

9. B In the second paragraph, we are informed that Bertha's "bliss" is a feeling brought about "suddenly"; we are not told of any specific event as the cause of it.

10. F We can infer from details provided by much of the passage that Nanny and Bertha continually compete for Little B and how her time is spent in the nursery. By the use of the word "triumph," we can infer that this round was in Nanny's favor—since Bertha had to not only relinquish the baby but leave the nursery as well.

11. B In the seventh paragraph, the passage states clearly that the company started its operations with capital obligations of "no less than $26 million."

12. H The word *subscriptions* is used in the context of raising money for a project involving the completion of the railway line.

13. D The author presents a chronological (time sequential) account of the history of the Erie Railroad—beginning with the first survey of the proposed construction line and ending with the final stage of construction. The author cites what appear to be carefully researched facts regarding the project's financing, the condition of the completed railroad, and the expansion of the railroad.

14. F In the last paragraph, the author suggests that, in its final expansion, the company's railroad connected Lake Erie with New York City. It is reasonably inferable that this "final expansion" connects the two most remote points.

15. D From the second paragraph, we know that, contrary to choice **D** it was the desire to be connected to Lake Erie by the southern counties that provided the initial impetus to the plan. Hence, it would make no sense to cite insufficient interest in this connection as an argument against the proposed Erie Railroad project.

16. H As stated in the sixth paragraph, "after eighteen years of effort, the line was opened to Lake Erie."

17. B The word *insolvent* refers to the company's monetary (money) problems as explained in the following sentence, which mentions the delay in further progress until sufficient new capital was raised.

18. G In the fourth paragraph, the passage informs us that the Panic of 1837 and the depression that followed did interfere with the construction, but that a year later "the state legislature provided a construction loan." We can surmise that the money loaned was used to continue the construction of the railroad.

19. A In lines 104–105, the author states that the railroad "soon became notorious for its many accidents. . . ." The word *notorious* means having an unfavorable reputation. Thus, we can infer that the company's ill repute was due to the frequent accidents involving its railroad.

20. J The first sentence of the passage tells us that the original plan was for the railroad to connect the Hudson River to Lake Erie. In the sixth paragraph, the passage indicates that the west terminus of the constructed railroad was on Lake Erie while the east terminus was on the Hudson. It is reasonable to infer, then, that the railroad was indeed completed according to the original plan. In the sixth paragraph, the passage indicates that various feeders (branches) were added to the railroad. Then, in the final paragraph, the author tells us of further expansion, via acquisition of other railroads.

21. C The sentence in which the word *munificent* appears tells us that Dr. Doyle's income was quite respectable "if not *munificent.*" The strong implication here is that Doyle's income was ample to lead a comfortable life. The word *bountiful* is consistent with this idea.

22. H The final paragraph tells us that it was only after the publication of a series of Holmes tales in a new magazine called *The Strand* that the "public finally took an interest in Dr. Doyle's detective."

23. B The passage provides ample information that runs contrary to the description in choice **B**—especially lines 88–91 in which Doyle comes across as a reluctant chronicler of Sherlock's fictional adventures. Also of special note are lines 117–118, in which we are informed of Doyle's "lack of enthusiasm for his protagonist" and how Doyle considered the Holmes stories insignificant compared to Doyle's other novels. It was the public's passion for Holmes stories, not Doyle's, that was the main reason Doyle wrote more Sherlock Holmes adventures.

24. F The third paragraph clearly states that Dr. Doyle believed "he could create a different kind of detective, one for whom detection was a science rather than art." And, nowhere in the passage does the author state or imply that Doyle was unsuccessful in doing so.

25. C The third paragraph tells us that the creator of Sherlock Holmes (Doyle) used one of his medical school professors, Dr. Joseph Bell, as a model for creating a detective "who applied similar intellectual powers to the solving of criminal mysteries."

26. G In lines 18–20 we learn that Doyle started writing because he felt that it "would keep him busy" and "hopefully bring additional funds."

27. D The author considers it fortunate that Doyle had time to concentrate on his writing. The implication here is that, in the author's view, Doyle's literary career was of more significance than his medical one.

28. F In the sixth paragraph, we're told that Doyle's move to London was enabled by "other small literary successes." One reasonable inference is that his successes allowed him to finally afford to live in London.

29. B In the final paragraph, we're told that Doyle was able to give up his practice and turn to writing full time mainly because of the public clamor for more Sherlock Holmes stories.

30. J The first paragraph tells us that Doyle moved to Portsmouth to begin a medical practice in 1882, and that since there were several well established physicians there, Doyle found himself with a great deal of spare time. Then, in the first sentence of the next paragraph, we learn that, to fill this time, "he began writing" stories—presumably, shortly after his arrival in Portsmouth in 1882. The final paragraph tells us that it wasn't until 1891, when *The Strand* begin publishing his Sherlock Holmes tales, that "the public finally took interest in Doyle's detective."

31. C The passage cites instances involving local residents and activists in particular geographic locations.

32. G The first paragraph informs us that Pace's "rudimentary research efforts were guided by hope" rather "than by scientific method." A research effort guided more by hope than by scientific method would be more basic than the other one. In this context, it makes sense that *rudimentary* might mean "basic." Besides, none of the other answer choices make sense in this context.

33. C The passage makes no mention of the spouses of abestos workers. All other choices indicated factors explicitly mentioned in the passage (lines 36–42) as factors leading to the conclusion that asbestos exposure causes cancer.

34. J The second paragraph defines "background rate" as "the number of people affected in the general population." The fourth paragraph indicates that the type of cancer afflicting the six young women "had been reported only once or twice before." This low incidence meets the definition of a "low background rate." The second paragraph defines "specificity" as "any notable characteristics of the individual affected in each case." The fact that the six young women suffered from "a certain vaginal cancer" suggests that what these women shared was a very specific, and unusual, symptom.

35. D The first sentence of the second paragraph refers to "cancer cases and other non-contagious conditions such as birth defects . . . ." This statement infers that cancer and birth defects fall into the same category—noncontagious conditions—meaning that neither type of condition can be transmitted by contact.

36. F To convey the meaning of the phrase "epidemiological gerrymandering," the author cites the case of citizens drawing boundaries around certain cancer cases and labeling it a cluster, thereby giving undue advantage to their cause. The activity that choice **F** describes is most analogous to this activity.

37. **A** According to the information in the fourth paragraph, the citizens might include cases of cancer that were either diagnosed before they moved into the locality in consideration or might have been exposed to a carcinogen in their previous domicile.

38. **G** The passage informs us, in lines 34–35, that "lung cancer is very common in the general population"—from which we can reasonably infer that the background rate for lung cancer is very high.

39. **C** The first paragraph of the passage, along with the passages final sentence, conveys this objective.

40. **G** In the last paragraph, the author cites the example of the Long Island cancer cluster, brought to light by a basic study conducted by a citizen. This study, combined with reports of other clusters in the community, helped "lay the groundwork" for the scientists to set up a well-designed study to determine the reason for the cancer cluster.

Science Reasoning

1. **D** In the station adjacent to lake 5, the sulfate-concentration levels varied only from 0.65 to 0.68 Mg/L—a variation of 0.03 Mg/L, the smallest among the five stations.

2. **J** The top cluster chart in Figure 2 shows pH levels in one of the two non-glacial lakes (denoted by hollow circles) slightly higher in 2000 than in 1993 (the x-value is slightly greater than the y-value), while for the other non-glacial lake there appears to have been little or no change (the level is just over 7 in both years). In contrast, the chart shows pH levels in all three glacial lakes (denoted by solid circles) to be significantly higher in 2000 than in 1993. (For each one, the x-value is significantly greater than the y-value.)

3. **A** Table 1 shows that, over the study period (1993–2000), sulfate-concentration levels increased slightly in lake 5 and decreased slightly in lakes 1–4; also, over the time period, decreases as well as increases were seen in all lakes. Hence, the data shows no clear trend in either direction. However, sulfate concentration in all lakes but one of the non-glacial lakes (in which the level was the same, about 300, in 1993 as well as in 2000) increased significantly over the study period.

4. **H** The rainfall-temperature chart (Figure 1) shows that, over the most recent century, air temperature has been rising steadily—perhaps to a critical point, around 1993, when the glaciers at the two glacial lakes began melting into the lakes, which are frozen over during fewer and fewer days each year. One possible consequence is that more industrial sulfate emissions are finding their way into lake water—by means of precipitation or glacial runoff, or both. The results of Experiment 2, which show the that the most dramatic increase in sulfate-concentration levels have occurred in the two glacial lakes, further support this hypothesis.

5. **B** Experiment 2 showed that, while sulfate-concentration levels in the two glacial lakes increased from 1993 to 2000, pH levels did not. On the other hand, in the non-glacial lakes, where the water is presumably warmer, levels of both sulfate-concentration and pH increased over the same time period. Choice **B** provides a possible explanation for this distinction between glacial and non-glacial lakes.

6. B The higher the rotational period, the more slowly a planet rotates. Table 1 shows that, in general, there is a direct relationship between surface temperature and rotational period. Mercury and Venus have by far the greatest surface temperatures *and* rotational periods. Surface temperatures and rotational periods for Earth and Mars are similar to each other but significantly less than the ones for Mercury and Venus. The next four planets show similar levels for each, but less than the levels for Earth and Mars. (Pluto presents the only significant exception to the general relationship between surface temperature and rotational period.)

7. C Earth's average density is 5.5 times that of water, the highest among the nine planets shown. Earth's rotational period, 24 hours, is fifth longest. (Mercury, Venus, Mars, and Pluto all have longer rotational periods, while the remaining four planets all have shorter periods.)

8. H In Table 1, average densities are relative to the density of water. Pluto's average density is given as 1.0—which by definition is the density of water.

9. A Mercury's rotational period is 59 Earth days. Thus, in 88 Earth days, Mercury rotates about 1.3 times.

10. F The figure showing density and diameter of the four terrestrial planets reveals a direct linear relationship between density and diameter for Mars, Earth, and Venus (for each planet, the density-diameter ratio is about the same), but not for Mercury (for which the density-diameter ratio is much higher).

11. D Notice that Mercury's orbital eccentricity is far greater than that of Venus (whose orbit is nearly circular). Accordingly, Mercury's surface temperatures will vary greatly as it orbits the Sun— increasing when its distance from the Sun grows smaller, then decreasing as its distance increases.

12. G In Table 1, a positive percent change indicates a net gain, while a negative percent change indicates a net loss. For all but two nutrients—ammonium and nitrate—the percent change is negative.

13. D Table 2 shows that, in each year (1–3) losses of both organic and inorganic matter were generally higher in deforested areas than in undisturbed areas.

14. F Table 2 shows that for two of the three sources of output (basin and filter), the loss of particulate matter in the undisturbed area increased significantly from Year 1 to Year 2, then decreased significantly from Year 2 to Year 3. In an undisturbed area, the most plausible reason for a substantial increase in runoff is an increase in precipitation.

15. C In both experiments, fine material was caught by using a net. Hence, from the information given in the question we can conclude that sodium is primarily a net-caught material. Table 2 shows that losses of net-caught materials changed very little during the three-year period. Nothing in the passage or in the tables suggests that changes in sodium losses were any greater or less than the overall changes shown in the table.

16. J Table 2 shows no clear trend in the undisturbed area; thus it is reasonable to forecast no marked change over the longer term. Although the table shows increasing losses in nutrient matter in the deforested area over the three-year period of the study, no evidence is given suggesting that this trend will continue indefinitely. To the contrary, the fact that the

ecologists applied herbicide to the deforested area to prevent organic matter from growing there strongly suggests that, over time, organic matter will reappear in the area, thereby slowly reducing the net losses of nutrients in that area.

17. B If the six experimental areas receive less rainfall per hectare than the forest as a whole, then the amount of nutrients entering each hectare would, on average, be greater than the table suggests. If this is the case, then unless the average runoff from other areas of the forest is also greater, net losses of nutrients would be less (and net gains would be greater) than the table suggests.

18. H Since the anti-cancer theory is based on the idea that gene imprinting evolved as a reaction to the possibility that the placenta might develop in a cancerous fashion, the theory would be severely undermined if it were true that plants, which have no placentas, had also developed the imprinting mechanism.

19. A The first sentence of the paragraph defining the protein control theory states this point succinctly.

20. J The competing parental interest theory assumes that both males and females seek to maximize the chances that their genes will be passed along to the next generation through a large number of healthy offspring. (It then postulates that, because males and females have different reproductive patterns, they have evolved different strategies for pursuing this result.) This assumption is stated in choice **J**.

21. A All three theories relate to reproduction in one way or another: the parental interest theory in regard to the transmission of genetic material through reproduction; the anti-cancer theory in relation to the development of the placenta, in which the fetus grows; and the protein control theory in relation to the healthy development of the embryo.

22. H Notice that the competing parental interest theory makes sense only if non-monogamous species are involved (since it is the differing reproductive habits of males and females that drives them to handle their genetic material differently). The finding described in choice **H** fits that theory because it suggests that imprinting is an unnecessary strategy in a monogamous species.

23. D This disorder supports the competing parental interest theory because the father's genetic material in that theory is associated with excessive growth, as here; it supports the anti-cancer theory because that theory associates imprinting with the need to control excessive growth of the placenta, as here; and it supports the protein control theory because, if the mother's genes are absent when the disorder occurs, this could explain the abnormal development found.

24. G This result would be consistent with the theory, since the female genes from Species A would not be imprinted for small size, while the male genes from Species B would be imprinted for large size. The combination would produce very large offspring.

25. B In all three experiments, the input amplitude was fixed at 2.0 volts.

26. F Only Experiment 2 shows the effect of a 1mH inductance using filter type 3. In the graph of Experiment 2, an input frequency of 100KHz (measured by the horizontal axis) corresponds roughly to a 1.9 volt output amplitude (measured by the vertical axis).

27. C The graphical representations of the three filters show that filter type 3 is the only one that contains an inductor. Experiment 2 was designed with inductance as the variable. It would make sense to conduct such as experiment only with a filter containing an inductor. Also, Experiment 3 was designed explicitly with inductance as a control; again, the description and methodology of the experiment makes sense only when a filter that contains an inductor is used.

28. G Based on the graph of Experiment 2, the higher the inductance level, the earlier a frequency response curve peaks. This means that at lower frequencies, sine waves are more likely to pass through the filter, contributing to a higher output amplitude.

29. D Only in Experiment 3 is capacitance a variable. The graphical results of that experiment show that, as the value of the capacitance increases, the frequency response curve narrows.

30. F Experiment 2 shows that a high inductance level results in the broadest peak, which is through the lower portion of the frequency spectrum. Conversely, Experiment 3 shows that a low capacitance level results in the broadest peak, which is through the higher portion of the frequency spectrum. Thus, it makes sense to combine both features in order to attain a high level of reception throughout the entire frequency spectrum.

31. C The question refers to generation 1 in Figure 1. The male and the female (the parents of generation 2) each have one copy of the disease gene (denoted by an uppercase "D").

32. F The only person in the figure who might contract the disease is the female in generation 3 identified as "DD." Both of her parents were healthy carriers—that is, they both had one copy of the disease gene. Thus, choice **F** cannot be true.

33. D Figure 2 does not provide any information about the father of her child. If the father has no copy of the disease gene, then the probability of their passing the disease onto their child would be zero (0%). Otherwise (if he has either one or two copies of the disease gene), that probability would be greater than zero.

34. G Figure 2 shows a total of nine children and grandchildren of the two individuals in generation 1. (Do not count the individuals in generation 2 who are parents but are not descended from generation 1.) Of these nine descendants, a total of four (one child and three grandchildren) have a copy of the disease gene (marked by an uppercase "D").

35. D In the case of a disease with a dominant inheritance pattern, if a person has at least one disease gene, that person will definitely have the disease. Since neither of Pamela's parents had disease X, the disease must have a recessive (and *not* a dominant) inheritance pattern.

36. H In every season except summer, salinity is lower at 5 meters than at 20 meters, and even lower at the surface. In summer, salinity is the same at all levels, which at least does not run contrary to the pattern in all other seasons.

37. D Seasonal increases and decreases in the number of salmon caught do not correspond to seasonal increases and decreases in water temperature at the surface and at 5 meters below the surface. As summer turns to fall, salinity levels decrease dramatically while the number of salmon caught, which is one indication of the level of the salmon population in the bay, increases dramatically.

38. **G** Choice **G** tells us that the local human population does not depend at all on salmon as a source of protein. But, complaints of protein deficiency-related diseases vary dramatically from season to season. Thus, it makes no sense that salmon availability has anything to do with protein deficiency-related illnesses.

39. **A** Seasonal changes in salinity at the ocean floor vary directly with the sample count of *gammarus locusta*. What's more, percent changes in the sample count of *gammarus locusta* in response to salinity changes are far greater than percent changes in the sample count *Gammarus duebent* in response to salinity changes. From winter to spring, for example, compare the 98% decrease in the *locusta* count (from 340 to 5) to the mere 50% decrease in the *duebent* count (from 50 to 25). Thus, it appears that *locusta* are more sensitive to salinity changes than *duebent*.

40. **G** The fact that these illnesses occur mainly in the winter and spring, considered together with the comparatively high number of salmon caught and bears observed during the fall, suggest that the local villagers consume salmon and bear meat (if they hunt bears for food) shortly after killing it. By preserving the fish and meat for consumption during the winter and spring, the villagers might very well avoid these types of illnesses.

Your Practice Test Scores

The results from your practice tests will give you a **general** idea of what you might score if you had to take the ACT today. To convert the number of right answers on your self-evaluation test into an ACT scaled score, do the following:

Refer to the table below. For each subject area, count the number of right answers and find that number in the left-hand column marked "Raw Score." Move to the right until you have the column for the appropriate subject. That is your ACT scaled score for the subject area. For example, if you had 39 right answers on your Math test, you would find the number 39 in the left-hand column, then move right to the Math column and see that you have an ACT scaled score of 23.

After you have found your scaled score for each subject, add all four scaled numbers together and divide by four. Round fractions to the nearest whole number; round upward. This number is your ACT composite score.

Score Conversion Table				
Raw Score	English Scaled Score	Math Scaled Score	Reading Scaled Score	Science Scaled Score
75	36			
74	35			
73	34			
72	33			
71	32			
70	31			
69	30			
68	30			
67	29			
66	29			
65	28			
64	28			
63	27			
62	27			
61	26			
60	26	36		
59	25	35		

Score Conversion Table				
Raw Score	English Scaled Score	Math Scaled Score	Reading Scaled Score	Science Scaled Score
58	25	34		
57	24	34		
56	24	33		
55	23	32		
54	23	31		
53	23	30		
52	22	30		
51	22	29		
50	22	29		
49	21	28		
48	21	28		
47	21	27		
46	20	27		
45	20	26		
44	20	26		
43	19	25		
42	19	25		
41	19	24		
40	18	24	36	36
39	18	23	35	34
38	18	23	33	32
37	17	23	32	30
36	17	22	31	29
35	17	22	30	28
34	16	21	29	27
33	16	21	28	27
32	15	20	27	26
31	15	20	27	25
30	14	19	26	24
29	14	19	25	24

	Score Conversion Table			
Raw Score	**English Scaled Score**	**Math Scaled Score**	**Reading Scaled Score**	**Science Scaled Score**
28	14	19	25	23
27	13	18	24	23
26	13	18	23	22
25	13	18	23	22
24	12	17	22	21
23	12	17	21	21
22	12	17	20	20
21	11	16	19	20
20	11	16	18	19
19	11	16	18	19
18	10	15	17	18
17	10	15	16	18
16	10	15	15	17
15	9	14	15	17
14	9	14	14	16
13	9	14	14	16
12	8	13	13	15
11	8	13	13	15
10	7	13	12	14
9	7	12	11	13
8	6	12	10	12
7	6	11	8	11
6	5	11	7	10
5	4	10	6	9
4	3	8	5	8
3	2	6	4	7
2	2	5	3	5
1	1	3	2	3
0	1	1	1	1