Contents

Part 1: General Arithmetic

When Are We Ever Gonna Have to Use — Fractions?

1. **Advertising Agent** (I)

   An agent has placed newspaper ads of 6 1/2 c.i. (column inches), 5 3/4 c.i., 3 1/4 c.i., 4 3/4 c.i., and 5 c.i. At the rate of $16 per column inch, find the total cost of the ads.

2. **Airplane Mechanic** (I)

   The "aileron droop" of a certain plane must be adjusted to 7/8 inch plus or minus 1/4 inch. Given this leeway (called "tolerance"), what is the maximum droop allowed?

3. **Airplane Mechanic** (II)

   A piece of tubing 9 5/8 inches long is cut from a piece 33 1/2 inches long. Allowing 1/16 inch for the cut, how much is left?

4. **Airplane Mechanic** (III)

   Drill sizes are in fractions, yet many dimensions are often given as decimals. A blueprint calls for a hole of 0.391 inch. Find the fractional drill size required if the hole must be drilled 1/64 inch smaller than the size of the hole called for in the blueprint. (**Hint:** Convert the decimal size to a fraction with a denominator of 64. Round to the nearest 64th.)

5. **Airplane Pilot** (I)

   A plane is consuming fuel at the rate of 7 1/2 gallons per hour. The pilot has 18 gallons remaining. How long will the fuel last?

6. **Architect * (also Drafter)** (I)

   If 1/4 inch represents 1 foot on a blueprint, how many inches on the drawing will be required to represent 18 feet?

7. **Attorney** (III)

   The Justice Department is suing Sage Brush Independent School District to obtain special education facilities for handicapped children. As the attorney on the case, you must first show the court the total budget for the coming school year.

Answers

Part 1: General Arithmetic

Fractions (pages 1–8)

1. $404 **2.** 1 1/8" **3.** 23 13/16" **4.** 3/8" **5.** 2 2/5 hr or 2 hr 24 min **6.** 4 1/2" **7.** $3,694,425; $1,254,167; $42,098,592 **8.** 1 15/64" **9.** 92 **10.** 7/8" **11.** $2900 **12.** Heavy: 571; Light: 286 **13.** 5 9/16" **14.** 22 3/16" **15.** 108 1/4 volts **16.** 48 **17.** $10,160 **18. a.** 2/9 **b.** $33.33 **19.** $38.75 **20.** 4 sheets **21.** 18 **22.** 1/1024 **23.** 5 2/5" **24.** 31 **25.** 2 1/2 **26.** 2 2/5 **27.** 1/2 **28.** Top, right, and left: 1 1/4"; bottom: 2 1/4" **29.** 2 1/6 ft **30.** 1/4 in. per ft **31.** 99,000 **32.** Overstocked by 7/20 of a roll **33.** 1 2/3" **34.** 770 acres **35.** $436.33 **36.** $3487.50 **37.** $516 **38.** $4032 **39.** 37 1/8"

Decimals (pages 9–18)

1. 6.51 ft **2.** 80.3—in the safe range **3.** 18,240 **4.** $101,759 **5.** 153.6 lb **6.** 0.0035" **7.** $1206.12 **8.** 2.80" **9.** $409.03 **10.** 85.4 lb/ft **11. a.** $34.55 **b.** $713.08 **12.** 2.373 volts **13.** 18.1 lb **14.** 3.4 hr **15.** $1793.38 **16.** 8.36 lb **17.** 8125 **18.** 500.5 **19.** 18.4 microns **20.** 2 **21. a.** $85.59 **b.** $389.91 **22.** 1.13" **23.** 5270.4 gal **24.** 336 sq ft **25.** $80,144.75 **26.** $21,790 **27.** Full carton ($81.60 vs. $96) **28.** $268.75 **29.** Single: $127.04; Double: $104.52 **30.** 240 pages **31.** $2.06 **32.** $4.50 **33. a.** $862.50 **b.** $0.48 **c.** $2.23 **34.** 144 months or 12 years **35.** $756 **36.** 0.0679 **37.** 0.3062" **38.** $2242.50 **39.** 170 **40.** 127.22 ft **41.** $58.13 **42.** $6.29 **43.** 7.6 mg/l **44.** 56.241 cu ft

Averages (pages 19–24)

1. $200 **2.** $200 **3.** 172 mph **4.** $282,500 **5.** $183,050 **6.** $(a + b + c + d)/4$ **7.** $333.50 **8.** 257 ft **9.** 6.5 **10. a.** 3.3 **b.** approx. 1270 **11.** 9.2 ft/sec **12.** 7% **13.** 0.7848" **14.** 65.4° **15.** 12.2 per month; 146 total **16.** 5 mm **17.** 235 mg **18. a.** Jones: 6.8; Martinez: 5.8; Larson: 4.3 **b.** 5.7 **19. a.** 5140 **b.** No **20.** $650 **21.** $6.65 **22.** $139.50 **23.** 0.149 or 0.15 rounded; yes

Ratio and Proportion (pages 25–34)

1. Water—$12.51; Sewer—$4.91; Trash—$6.58 **2.** $600 **3.** 30.8 gal **4.** 145 mph **5.** 3.75:1 inventory ratio; lasts 97 days **6.** $950 **7.** 30.17 cu in. **8. a.** 28,800:1 **b.** 14,400 ft **9.** 6.4 oz chemical, 313.6 oz water **10.** 1:2.5 **11.** 420 **12.** x = 35 ft; y = 44 ft **13.** 125 lb cement, 375 lb sand, 500 lb gravel **14.** 25 ft by 36.25 ft by 6.25 ft **15.** $1415.70 **16.** 4450 to 5480 cars per day **17.** 1.17:1 **18.** 22 sec **19.** 64.6 gal/acre **20. a.** 58 2/3 gal/acre **b.** 2.25 mph **21.** First plan: 3.88:1; Second plan: 3.44:1; first is better. **22.** 390 **23.** 125 **24.** 12,000 BTU/hr **25.** A,B: 1500 lb each; C,D: 3500 lb each **26.** 8.4:1 **27.** 2268 rpm **28.** 88 mg/dl **29.** 12.8 oz **30. a.** 3:1 **b.** 9 **c.** 75 **31.** 4 4/5 tablets **32.** 12 minims **33.** 4 gal **34.** Creme A: 95.0 g; Petrolatum: 147.3 g; Univase: 237.6 g **35.** 208 1/3 mg **36.** 8 oz **37.** 44 ft **38.** 303 **39.** 70.4 lb **40.** 5 1/4" **41.** 24.4% (16% from first col., 8.4% from second) **42.** $388 **43. a.** A: $56.72;