Test 17

1) D

2) B Two unit multipliers are needed for square units

3) D $\frac{80\,\cancel{oz}}{1}\cdot\frac{1\text{ lb}}{16\,\cancel{oz}} = 5\text{ lbs}$

4) A $\frac{6\,\cancel{yds}}{1}\cdot\frac{3\text{ ft}}{1\,\cancel{yd}} = 18\text{ ft}$

5) B $\frac{360\,\cancel{cm^3}}{1}\cdot\frac{1\text{m}}{100\,\cancel{cm}}\cdot\frac{1\text{m}}{100\,\cancel{cm}}\cdot\frac{1\text{m}}{100\,\cancel{cm}} =$

$\frac{360}{1{,}000{,}000} = .00036\text{m}^3$

6) C $\frac{3\,\cancel{mi^2}}{1}\cdot\frac{5280\text{ ft}}{1\,\cancel{mi}}\cdot\frac{5280\text{ ft}}{1\,\cancel{mi}} = 83{,}635{,}200\text{ ft}^2$

7) D $\frac{9\,\cancel{km}}{1}\cdot\frac{.62\text{mi}}{1\,\cancel{km}} = 5.58\text{ mi}$

8) C $\frac{56\,\cancel{oz}}{1}\cdot\frac{28\text{ g}}{1\,\cancel{oz}} = 1{,}568\text{ g}$

9) A $\frac{10\,\cancel{qts}}{1}\cdot\frac{.95\,\ell}{1\,\cancel{qt}} = 9.5\,\ell$

10) B $\frac{2\,\cancel{greens^2}}{1}\cdot\frac{5\,\cancel{blue}}{1\,\cancel{green}}\cdot\frac{5\,\cancel{blue}}{1\,\cancel{green}}\cdot\frac{3\,\cancel{red}}{1\,\cancel{blue}}\cdot\frac{3\,\cancel{red}}{1\,\cancel{blue}}$

$= 450\,\cancel{reds}^2$

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11) A $(4+\sqrt{10})(4-\sqrt{10}) = 16-10 = 6$

12) A $\frac{X}{6+i}\cdot\frac{6-i}{6-i} = \frac{6X-iX}{36-(-1)} = \frac{6X-iX}{37}$

13) C $|3^2-8^2| = |9-64| = |-55| = 55$

14) A A line only has one dimension: length

15) B $2(2A)\left(\frac{B}{2}\right) = 2AB\text{ units}^2$

Test 18

1) A D = RT, B and D may be derived from this

2) B D = (60)(4) = 240 miles

3) C $T = \frac{270}{3} = 90$ minutes

4) D $R = \frac{400}{1.75} = 228.57 \approx 229\text{mph}$

5) B

6) A $\overleftrightarrow{D_P = D_H}$

$R_PT_P = R_HT_H$

$(9)T_P = (6)(6)$

$T_P = 4$ hours to park

7) D RT = D (9)(4) = 36 mi or (6)(6) = 36 mi

8) C $\left|\overrightarrow{D_S \quad D_J}\right|$ $D_S = D_J$

$R_ST_S = R_JT_J$

$R_S(4) = (R_S+2)(3)$

9) C $4R_S = 3R_S + 6$ (from above)

$R_S = 6$ mph

10) A (6)(4) = 24 miles

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11) B 4 - 1 = 3 factors $\frac{5\cdot\cancel{4}^{2}\cdot\cancel{3}}{1\cdot\cancel{2}\cdot\cancel{3}} = 10$

exponent of Y term is 4 - 1 = 3

exponent of 2X term is 5 - 3 = 2

$10(2X)^2Y^3 = 40X^2Y^3$

12) B $m\angle 2 = 180° - 132° = 48°$ (supplementary angles)

$m\angle 7 = 48°$ (alternate exterior angles)

13) D Ex:

14) C Volume of a cylinder = area of base times height =

$(\pi)(2X)^2(H) = \pi 4X^2H$

15) C Surface Area = 2 times area of base plus area of side $= 2[\pi(2X)^2] + (\pi 4X)(H) =$

$8\pi X^2 + 4\pi XH$

Test 19

1) C

2) A

3) A $D_A + D_J = 24$

$R_AT_A + R_JT_J = 24$

$(4)T + (8)T = 24 \quad (T_A = T_J)$

$T = 2$ hours

4) A

5) B $D_R + D_S = 39$

$R_RT_R + R_ST_S = 39$

$(5)(2T_S) + (3)(T_S) = 39 \quad (T_R = 2T_S)$

$13T_S = 39$

$T_S = 3$ hours

6) D $T_R = 2T_S = 2(3) = 6$ hours

7) B

8) D D = RT 130 = R(5)

R = 26 mph (their rates are the same)

9) C $D_A + D_V = 130$

$R_AT_A + R_VT_V = 130$

$(26)T_A + (26)(T_A - 1) = 130 \quad (T_V = T_A - 1)$

$52T_A = 156$

$T_A = 3$ D = (26)(3) = 78 miles

10) B D = (26)(2) = 52 miles

or 130 - 78 = 52 miles

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11) A $2\times 2 = 4$

$2\times 2\times 2\times 2 = 16$

$2\times 3\times 3 = 18$

} 2 is the greatest common factor

12) B $(3^3)(3^2) = (3\cdot 3\cdot 3)(3\cdot 3) = 3^5 = 243$

13) B

$$2X+3\overline{)2X^2+11X+12}\quad X+4$$

$$-2X^2-3X$$

$$8X+12$$

$$-8X-12$$

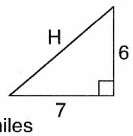
14) C

15) B $6^2 + 7^2 = H^2$

$36 + 49 = H^2$

$85 = H^2$

$\sqrt{85} \approx 9$ miles



Test 20

1) A

2) C

3) D Y = 5X - 3, Y intercept is -3 has a steep positive slope

4) B Y = -2X, Y intercept is 0 has a negative slope

5) C Y = 3X + 2, Y intercept is 2 moderate positive slope

6) C (2) = 3(1) + b

2 = 3 + b

-1 = b (y intercept)

7) A The difference in Y divided by the difference in X

8) D $\frac{5-1}{-1-1} = \frac{4}{-2} = -2$ slope

(1) = (-2)(1) + b

1 = -2 + b

3 = b (Y intercept)

Y = -2X + 3

9) B May also be written as 2X + Y - 3 = 0

10) A $\frac{1-(-2)}{-1-3} = \frac{3}{-4}$ slope

$(1) = \left(\frac{-3}{4}\right)(-1) + b$

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

$\frac{1}{4} = b \qquad Y = -\frac{3}{4}X + \frac{1}{4}$

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11) A Quadratic formula

12) D The discriminant is under a square root sign, so a negative number will always yield an imaginary result.

13) B X + .15X + .05X = 68.15

1.20X = 68.15

X = $56.79

14) A $93{,}000{,}000 = 9.3 \times 10^7$

$30{,}000 = 3.0 \times 10^4$

$(9.3 \div 3.0)(10^7 \div 10^4) = 3.1 \times 10^3$ days

15) D $365 = 3.65 \times 10^2$

$(3.1 \div 3.65)(10^3 \div 10^2) \approx$

$.85 \times 10^1 = 8.5$ years