Test 13

1) B

2) A

3) D

4) C

5) C $X^2 + X = X + 9 \rightarrow X^2 - 9 = 0$
$(0)^2 - 4(1)(-9) = 36$

6) D $X^2 + 5 = 2X \rightarrow X^2 - 2X + 5 = 0$
$(-2)^2 - 4(1)(5) = 4 - 20 = -16$

7) B $X^2 + 9 = -6X \rightarrow X^2 + 6X + 9 = 0$
$(6)^2 - 4(1)(9) = 36 - 36 = 0$

8) A $X^2 - 32 = -4X \rightarrow X^2 + 4X - 32 = 0$

$X = \dfrac{-4 \pm \sqrt{4^2 - 4(1)(-32)}}{2(1)} = \dfrac{-4 \pm \sqrt{16 + 128}}{2}$

$= \dfrac{-4 - \sqrt{144}}{2} = \dfrac{-4 - 12}{2} = \dfrac{-16}{2}, \dfrac{8}{2} = -8, 4$

9) A $X^2 + 3X - 6 = 0$

$X = \dfrac{-3 \pm \sqrt{3^2 - 4(1)(-6)}}{2(1)} = \dfrac{-3 \pm \sqrt{9 + 24}}{2} =$

$\dfrac{-3 \pm \sqrt{33}}{2}$

10) C $X^2 - 5X = -8 \rightarrow X^2 - 5X + 8 = 0$

$X = \dfrac{-(-5) \pm \sqrt{(-5)^2 - 4(1)(8)}}{2(1)} =$

$\dfrac{5 \pm \sqrt{25 - 32}}{2} = \dfrac{5 \pm \sqrt{-7}}{2} = \dfrac{5 \pm i\sqrt{7}}{2}$

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11) D A and B are not true, C is true, but does not prove triangles congruent

12) B $62,000 = 6.2 \times 10^4$
$.75 = 7.5 \times 10^{-1}$
$(6.2 \times 7.5)(10^4 \times 10^{-1}) =$
$46.5 \times 10^3 = 4.65 \times 10^4$

13) A

14) D They are mirror images of each other

15) A The figure has been translated or moved over 2 and down 6

Test 14

1) C $250 - 200 = \$50$ Saved
WP x 250 = 50
$WP = \dfrac{50}{250}$
$WP = \dfrac{1}{5} = .20 = 20\%$

2) A $24 - 12 = \$12$ markup
WP x 12 = 12
$WP = \dfrac{12}{12} = 1 = 100\%$

3) C $7.83. - 7.25 = .58$ raise
WP x 7.25 = .58
$WP = \dfrac{.58}{7.25} = .08 = 8\%$

4) D $P + .25P = 100,000$
$1.25P = 100,000$
$P = \$80,000$

5) A $38.95 \times .05 = 1.95$ tax
$38.95 \times .20 = 7.79$ tip
$38.95 + 1.95 + 7.79 = \$48.69$

6) A $.45 \times 75 = \$33.75$ off
$75 - 33.75 = \$41.25$

7) B $.40 \times 32 = \$12.80$ markup
$32 + 12.80 = \$44.80$

8) D $\dfrac{35}{23 + 35} = \dfrac{35}{58} = .60 = 60\%$

9) D $\dfrac{2(16)}{12 + 32} = \dfrac{32}{44} = .73 = 73\%$

10) C $\dfrac{23}{23 + 16 + 1} = \dfrac{23}{40} = .575 \approx 58\%$
(round numbers ending in 5 to next higher number)

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11) B $\dfrac{1}{9^2} = \dfrac{1}{81}$

12) A $\dfrac{Y}{X} \cdot \dfrac{X+2}{X+2} + \dfrac{4Y}{X+2} \cdot \dfrac{X}{X} =$

$\dfrac{YX + 2Y + 4YX}{X(X+2)} = \dfrac{5XY + 2Y}{X(X+2)}$ $(X \neq 0, -2)$

13) B Area $= (3.14)(3)^2 = 28.26$
unshaded area is 85%
$28.26 \times .85 = 24.02$

14) C

15) D $(2\sqrt{5})(5\sqrt{12}) = 10\sqrt{60} =$
$10\sqrt{4 \cdot 15} = 20\sqrt{15}$

Test 15

In this test, all unknowns are such that denominators are not equal to zero

1) D $ABC = D$ $A = \dfrac{D}{BC}$

2) C $\dfrac{YZ}{B} = \dfrac{A}{X}$ $AB = XYZ$
$B = \dfrac{XYZ}{A}$

3) A $\dfrac{Q}{P} - R = 0$ $\dfrac{Q}{P} = R$ $Q = RP$

4) D $X(Y - Z) + D = 4$
$X(Y - Z) = 4 - D$
$X = \dfrac{4 - D}{Y - Z}$

5) B $\dfrac{1}{B} = \dfrac{1}{C}$ $B = C$

6) B $\dfrac{X}{YZ} = \dfrac{S}{T}$ $YZS = XT$
$Y = \dfrac{XT}{ZS}$ or $Y = \dfrac{TX}{SZ}$

7) C $\dfrac{RS}{T} = \dfrac{B}{A}$
$RSA = BT$ $A = \dfrac{BT}{RS}$

8) A $X - Z = Y + 5$
$X - Z - 5 = Y$ or $Y = X - Z - 5$

9) D $A(B + C) - D = X$
$A(B + C) = X + D$
$B + C = \dfrac{X + D}{A} \rightarrow B = \dfrac{X + D}{A} - C$

10) B $-X + Y - 4 = A + B \rightarrow X - Y + 4 = -A - B$
$X = -A - B + Y - 4$

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11) B $\dfrac{3}{2\sqrt{8}} \cdot \dfrac{\sqrt{8}}{\sqrt{8}} = \dfrac{3\sqrt{4 \cdot 2}}{2 \cdot 8} = \dfrac{6\sqrt{2}}{16} = \dfrac{3\sqrt{2}}{8}$

12) A Ex: $(X + 3)(X + 2) = X^2 + 5X + 6$

13) B $6 + (-8) - 4 + 3 = 6 - 8 - 4 + 3 = -3$

14) A Circumference $= (3.14)(10) = 31.4$ ft. or think "pi is a little more than 3."

15) C $\dfrac{a}{A} \div \dfrac{b}{B} = \dfrac{a}{A} \cdot \dfrac{B}{b}$ (invert and multiply)
To prove:
$\dfrac{\frac{a}{A}}{\frac{b}{B}} = \dfrac{aB}{Ab}$ ($\dfrac{B}{b}$ is the reciprocal of $\dfrac{b}{B}$)

Test 16

1) D $3 + 5 = 8$ total, not 15

2) B Add $3 + 1$ for total attempts of 4

3) D $\dfrac{R}{P} = \dfrac{2}{7}$ $\dfrac{R}{21} = \dfrac{2}{7}$ $R = \dfrac{2 \cdot 21}{7} = 6$ red

4) A $\dfrac{F}{243} = \dfrac{5}{9}$ $F = \dfrac{243 \cdot 5}{9} = 135$ females

5) A $\dfrac{L}{540} = \dfrac{3}{5}$ $L = \dfrac{540 \cdot 3}{5} = 324$ who only looked

6) C $\dfrac{R}{S} = \dfrac{4}{5}$ $\dfrac{R}{100} = \dfrac{4}{5}$ $R = \dfrac{100 \cdot 4}{5} = 80$ rainy days

7) B $\dfrac{S_2}{CS_2} = \dfrac{64}{76}$ $\dfrac{S_2}{798} = \dfrac{64}{76}$ $S_2 = \dfrac{798 \cdot 64}{76} = 672g$

8) B $\dfrac{H_2}{H_2O} = \dfrac{2}{18}$ $\dfrac{H_2}{720} = \dfrac{2}{18}$ $H_2 = \dfrac{2 \cdot 720}{18} = 80g$

9) C $\dfrac{O}{H_2O} = \dfrac{16}{18}$ $\dfrac{O}{1440} = \dfrac{16}{18}$
$H_2 = \dfrac{1440 \cdot 16}{18} = 1280g$

10) A $K = 39$, $C = 12$, $N = 14$ $39 + 12 + 14 = 65$

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11) D $\sqrt{\sqrt[3]{X}} = \sqrt{X^{1/3}} = (X^{1/3})^{1/2} = X^{1/6}$

12) C

13) A $\left(\dfrac{1}{2}\right)(-18) = -9, (-9)^2 = 81$

14) B The easiest way to find the answer is to substitute the given numbers in the second equation, and try the resulting value of X in the first equation
$X = (3) - 1 = 2$
$(2)^2 - (2) + 2(2) = 6$
$4 - 2 + 4 = 6 \rightarrow 6 = 6$ (true)
You can also solve for y using substitution

15) D Volume of cube: $10 \times 10 \times 10 = 1,000$ cm^3
Volume of tube: $(3.14)(1)^2(10) = 31.4$ cm^3
$1,000 - 31.4 = 968.6$ cm^3