Algebra

1.
$$\frac{x^2-1}{x+1} = \frac{\cancel{(x+1)}(x-1)}{\cancel{x+1}} = x-1$$
if $x = -3, \quad ans = -3-1 = -4$

2.
$$RHR = 54$$
$$MHR = 220 - 43 = 177$$
$$THR = 54 + .65(177-54)$$
$$= 54 + .65(123)$$
$$\approx 54 + 80 = 134$$

3. $h = .75(220 - a)$

4.
$$\text{Average speed} = \frac{\text{(total distance)}}{\text{(total time elapsed)}}$$
$$350 = \frac{8x + 7(325)}{15}$$
$$15(350) = 8x + 7(325)$$
$$8x + 7(325) = 15(350)$$

5.
$$Ans = 3a + 4b + 6a + 3b$$
$$9a + 7b$$

6.
$$Ans = 3a^2b + 2a^2b^2 + (-ab^2 + a^2b^2)$$
$$= 3a^2b + 2a^2b^2 - ab^2 + a^2b^2$$
$$= 3a^2b + 3a^2b^2 - ab^2$$

7.
$$(x^2 - x - 20) = (x-5)(x+4)$$
$$Ans = (x-5)$$

8.
$$(x^2 - 5x - 6) = (x-6)(x+1)$$
$$Ans = (x-6)$$

9.
$$2x - 10 = -11$$
$$2x = -11 + 10 = -1$$
$$x = -\frac{1}{2}$$

10.
$$\frac{4}{5} - \frac{3}{10} = x + \frac{3}{2}$$
$$x = \frac{4}{5} - \frac{3}{10} - \frac{3}{2} = \frac{8 - 3 - 15}{10} = \frac{-10}{10} = -1$$
$$Ans: \quad x = -1$$

11.
$$\frac{16r^3tz^5}{-4rt^3z^2} = -4r^{3-1}t^{1-3}z^{5-2}$$
$$= -4r^2t^{-2}z^3$$
$$= \frac{-4r^2z^3}{t^2}$$

12.
$$\frac{\sqrt{x}}{3\sqrt{x} - \sqrt{y}} = \frac{\sqrt{x} \quad (3\sqrt{x} + \sqrt{y})}{(3\sqrt{x} - \sqrt{y})(3\sqrt{x} + \sqrt{y})}$$
$$= \frac{3x + \sqrt{xy}}{(9x - y)}$$

13.
$$\frac{x^2 + 12x + 32}{x + 4} = \frac{(x + 8)\cancel{(x + 4)}}{\cancel{(x + 4)}} = (x + 8)$$

14.
$$\frac{9 - x^2}{x - 3} = \frac{(3 - x)(3 + x)}{(x - 3)} = \frac{-\cancel{(x - 3)}(3 + x)}{\cancel{(x - 3)}} = -(3 + x) = -x - 3$$

15. Slope intercept form of a straight line. is $y = mx + b$
Rewriting, $2x + 3y + 6 = 0, \quad 3y = -2x - 6, \quad y = -\frac{2}{3}x - 2$
slope$=-\frac{2}{3}$

16. The straight line AB must be horizontal since $x = 2$, a vertical line, is the perpendicular bisector. IF C is the point where the lines $\overline{AB}$ and $x = 2$ intersect, then $|AC| = 6$ units, since $A = (-4, 1)$
So $C = (-4 + 6, 1) = (2, 1)$ and B must have coordinate $(8, 1)$