14. Determine the value of y for the system of equations. $x - 3y = 4$ and $2x + y = 8$

$2x + y = 8$
$-2x + 6y = -8$
$7y = 0$
$y = 0$

(4,0)

15. An auditorium earned $25,000 in sold-out concert ticket sales. Front section tickets cost $75 p seat and back section tickets cost $50 per seat. The number of front section seats is twice the nu of back section seats. How many seats are in the front section?

x = front
y = back

$75x + 50y = 25000$
$x = 2y$

$75(2y) + 50y = 25000$
$150y + 50y = 25000$
$\frac{200y}{200} = \frac{25000}{200}$
$y = 125$ back

$x = 2y$
$2(125)$
250

16. Sam has a total of 58 DVD's and CD's. If the number of CD's is two more than three times th number of DVD's, how many CD's does he have?

x y

$x + y = 58$
$y = 3x + 2$

$x + 3x + 2 = 58$
$4x + 2 = 58$
$-2 \quad -2$
$\frac{4x}{4} = \frac{56}{4}$
$x = 14$ DVD

$y = 3x + 2$
$3(14) + 2$
44 CDs

17. The length of each side of a square wooden box, in inches, is represented by the expression $8m^2$. The volume of the box, in cubic inches, is $(8m^2)^3$. Simplify this expression.

8^3m^6 or $512m^6$

18. Easton simplified the following expression: $(x^2y^6z^5)(x^4y^5z^3) = x^6y^{11}z^8$

If he writes his answer in the form of $x^ay^bz^c$, what is the value of b, the exponent on y?

11

19. A concert hall is in the shape of a rectangle. Its floor has a length of (x + 6) meters and a width of (2x - 3) meters. The expression below represents the area of the floor of the hall in square meters.

(x + 6)(2x - 3). Simplify this expression.

$(x+6)(2x-3)$
$2x^2 - 3x + 12x - 18$
$2x^2 + 9x - 18$

21. Simplify: $48xy^2 + 24xy^4 - 12x^2y^4$.

$12xy^2(4 + 2y^2 - xy^2)$

22. What is the value of x in:

$\frac{x+8}{5x-2} = \frac{3}{8}$

$8(x+8) = 3(5x-2)$

$8x + 64 = 15x - 6$

$-8x + 6 \quad -8x + 6$

$70 = 7x$

$10 = x$

23. Given the following: $y = 2x^2 + 8x + 7$

a. What is the axis of symmetry? $x = \frac{-b}{2a}$ $\frac{-8}{2(2)} = \frac{-8}{4}$ $x = -2$

b. What is the vertex? $(-2, -1)$

c. What is the y-intercept? $(0, 7)$

25. One solution of the equation $3x^2 - 16x + 5 = 0$ is 1/3. What is the other solution?

$(3x-1)(x-5)$

$x = \frac{1}{3}$ $x = 5$

26. What are the solutions to: $6x^2 = 18x$?

$6x^2 - 18x = 0$

$6x(x-3) = 0$

$\frac{6x}{6} = \frac{0}{6}$

$x = 0$ $x = 3$

27. The height in meters of a projectile can be modeled $h = -4.9t^2 + vt + s$ where t is the tim
seconds) the object has been in the air, v is the initial velocity (in meters per seconds) and s
height (in meters). A soccer ball is kicked upward from the ground and flies through the air
initial vertical velocity of 4.9 meters per second. Approximately, after how many seconds do

$-4.9t^2 + 4.9t = 0$

$-4.9t(t-1) = 0$

1 sec.