1. To solve each of these, remember that if $a \times b = 0$, then either $a = 0$ or $b = 0$; and also that $0^n = 0$ for any natural number n. Then:

(1) $8y\,(-2y + 9) = 0$, so

$$
\begin{aligned}
8y &= 0 & \quad or \quad & -2y + 9 = 0 \\
y &= 0 & & -2y = -9 \\
& & & y = \frac{9}{2}
\end{aligned}
$$

(2) $(-7y - 7)\,(-6y + 1) = 0$, so

$$
\begin{aligned}
-7y - 7 &= 0 & \quad or \quad & -6y + 1 = 0 \\
-7y &= 7 & & -6y = -1 \\
y &= \frac{7}{-7} & & y = \frac{1}{6} \\
y &= -1
\end{aligned}
$$

(3) $9\,(-6z - 10)\,(-10z - 4) = 0$, so

$$
\begin{aligned}
-6z - 10 &= 0 & \quad or \quad & -10z - 4 = 0 \\
-6z &= 10 & & -10z = 4 \\
z &= \frac{10}{-6} & & z = \frac{4}{-10} \\
z &= -\frac{5}{3} & & z = -\frac{2}{5}
\end{aligned}
$$

(4) $(-9 + x)^9 = 0$, so $-9 + x = 0$, so $x = 9$

2. To solve each of these, remember that if $a \times b = 0$, then either $a = 0$ or $b = 0$; and also that $0^n = 0$ for any natural number n. Then:

(1) $3z\,(2 + 5z) = 0$, so

$$
\begin{aligned}
3z &= 0 & \quad or \quad & 2 + 5z = 0 \\
z &= 0 & & 5z = -2 \\
& & & z = -\frac{2}{5}
\end{aligned}
$$

(2) $(-y - 5)\,(3 - 5y) = 0$, so

$$
\begin{aligned}
-y - 5 &= 0 & \quad or \quad & 3 - 5y = 0 \\
y &= -5 & & -5y = -3 \\
& & & y = \frac{3}{5}
\end{aligned}
$$

(3) $6\,(-5 + 9z)\,(-6z - 6) = 0$, so

$$
\begin{aligned}
-5 + 9z &= 0 & \quad or \quad & -6z - 6 = 0 \\
9z &= 5 & & -6z = 6 \\
z &= \frac{5}{9} & & z = \frac{6}{-6} \\
& & & z = -1
\end{aligned}
$$

(**4**) $(10z - 4)^5 = 0$, so $10z - 4 = 0$, so $10z = 4$, so $z = \dfrac{4}{10}$, so $z = \dfrac{2}{5}$

3. To solve each of these, remember that if $a \times b = 0$, then either $a = 0$ or $b = 0$; and also that $0^n = 0$ for any natural number n. Then:

(**1**) $6z\,(9z + 2) = 0$, so

$$
\begin{array}{lcl}
6z = 0 & \quad or \quad & 9z + 2 = 0 \\
z = 0 & & 9z = -2 \\
& & z = -\dfrac{2}{9}
\end{array}
$$

(**2**) $(1 + 4y)\,(-3 + 6y) = 0$, so

$$
\begin{array}{lcl}
1 + 4y = 0 & \quad or \quad & -3 + 6y = 0 \\
4y = -1 & & 6y = 3 \\
y = -\dfrac{1}{4} & & y = \dfrac{3}{6} \\
& & y = \dfrac{1}{2}
\end{array}
$$

(**3**) $2\,(4 + 4y)\,(-3 + 3y) = 0$, so

$$
\begin{array}{lcl}
4 + 4y = 0 & \quad or \quad & -3 + 3y = 0 \\
4y = -4 & & 3y = 3 \\
y = \dfrac{-4}{4} & & y = \dfrac{3}{3} \\
y = -1 & & y = 1
\end{array}
$$

(**4**) $(4 - 6y)^5 = 0$, so $4 - 6y = 0$, so $-6y = -4$, so $y = \dfrac{-4}{-6}$, so $y = \dfrac{2}{3}$