1 Worksheet

Solve:

$$\frac{\mathbf{p-7}}{\mathbf{12}} = \mathbf{-10} \tag{1}$$

$p - 7 = -120$
$p = -113$

$$\mathbf{9z - 45 = 45} \tag{2}$$

$9z = 90$
$z = 10$

$$\mathbf{9z - 4z + 4 = 24} \tag{3}$$

$5z + 4 = 24$
$5z = 20$
$z = 4$

$$\mathbf{3n + 5 + 12n = 35} \tag{4}$$

$15n + 5 = 35$
$15n = 30$
$n = 2$

$$\mathbf{-2(x + 6) = 32} \tag{5}$$

$-2x - 12 = 32$
$-2x = 44$
$x = -22$

$$\mathbf{3(x + 2) = 4 - x} \tag{6}$$

$3x + 6 = 4 - x$
$4x + 6 = 4$
$4x = -2$
$x = -\frac{1}{2}$

$$\mathbf{n + 3 > 12} \tag{7}$$

$n > 9$

$$\mathbf{2(x-4) < -4x} \tag{8}$$

$2x - 8 < -4x$
$6x < 8$
$x < \frac{4}{3}$

$$\mathbf{-4x > 20} \tag{9}$$

$x < -5$

$$\mathbf{6(x+2) - 8x > 6 + x} \tag{10}$$

$6x + 12 - 8x > 6 + x$
$-2x + 12 > 6 + x$
$-3x + 12 > 6$
$-3x > -6$
$3x < 6$
$x < 2$

Translate into an equation:

1. **The sale price of $125 for the camera is $5 less than one third of the original price.**
   p=original price
   $\frac{1}{3}p - 5 = 125$

2. **The 468 students in the school are six less than 22 times the number of students taking algebra.**
   n=number of students taking algebra
   $22n - 6 = 468$

3. **Rachel's current salary, $50 per week, is twice her starting salary increased by $10.**
   s=starting salary
   $2(s + 10) = 50$

4. **The 37 students on the bus are three times the number in the van increased by three.**
   v=number of students in the van
   $3(v + 3) = 37$

5. **Eight times an integer n is less than 48.**
   $8n < 48$

6. **The number of pebbles on the beach is at least five times greater than the number of trees in the forest.**
   p=number of pebbles, t=number of trees
   $p \geq [5t]$

Write the appropriate equation and solve:

1. **Eve bought 3 tickets to a play. She paid $29 for the tickets, including a $2 tax. Find the price of each ticket.**
   Let t be the price of a single ticket.
   $3t + 2 = 29$
   $3t = 27$
   $t = 9$

2. **The cost of grapefruits is 25% *more* this week than it was last week. If the price of grapefruits is $5 this week, what was the price last week?**
   Let p represent the price of grapefruits last week.
   $p + \frac{1}{4}x = 5$
   $\frac{5}{4}x = 5$
   $x = 5(\frac{4}{5})$
   $x = 4$

3. **The cost of grapefruits is 25% *less* this week than it was last week. If the price of grapefruits was $3 last week, what is the price this week?**
   Let p represent the price of grapefruits this week.
   $p - \frac{1}{4}p = 3$
   $\frac{3}{4}p = 3$
   $p = 4$

4. **The equation for the perimeter of a rectangle is that the perimeter P is the sum of twice the length l and twice the width w, or $P = 2l + 2w$. If the length of a field is 10m and the width is 5m, what is the perimeter.**
   Here we will just substitute l=10 and w=5.
   $P = 2 \times 10 + 2 \times 5$
   $P = 20 + 10$
   $P = 30$

5. **Another perimeter problem. If 50m of wire are needed to build a fence for a 9m wide rectangular field, how long is the field?**
   This problem is a bit more complicated. We are told the WIDTH of the field, and the PERIMETER but we want to solve for the length. Let us call is l.
   We know that $P = 2l + 2w$
   We also know that $P = 50$ and that $w = 9$.
   $2 \times 9 + 2l = 50$
   $2l = 32$
   $l = 16$

6. **One hour ago it was three times as long after noon as it was until midnight. What time is it?**
   For simplicity, let's think of twelve noon as 0 hrs and 12 midnight as 12 hours. We will take t as the time now. Then one hour ago was $t - 1$.
   $(t - 1) = 3[12 - (t - 1)]$
   $t - 1 = 3(12 - t + 1)$
   $t - 1 = 36 - 3t + 3$
   $4t - 1 = 39$
   $4t = 40$
   $t = 10$
   Note, we could have solved instead for the time ONE HOUR AGO, let us call that $x = t - 1$.
   $x = 3(12 - x)$
   $x = 36 - 3x$
   $4x = 36$
   $x = 9$
   $t = x + 1 = 10$