Jakarta International School
7th Grade

Practice Test - Green

Solving Multi-Step Equations

Name: _____

Date: _____

Score: $\frac{}{33}$

Clearly show required work. Check Carefully! (2 points per answer)

1) Complete the table below.

Solve each equation and **show all working out.**	**Check.**
a) $\frac{3}{5}p+24=36$ $\frac{3}{5}p+24-24=36-24$ $\frac{3}{5}p=12$ $\frac{3}{5}p\times\frac{5}{3}=\frac{12^{4}\cdot 5}{3_{1}}$ $p=20$	$\frac{3}{5_{1}}\cdot\frac{20^{4}}{1}+24=36$ $12+24=36$ $36=36$ ✓ [3 marks]
b) $-11=4-3a$ $-11-4=4-3a-4$ $\frac{-15}{-3}=\frac{-3a}{-3}$ $5=a$	$-11=4-3\cdot 5$ $-11=4-15$ $-11=-11$ ✓ [3 marks]
c) $2(x-1)-9x=-9$ $2x-2-9x=-9$ $-7x-2=-9$ $-7x-2+2=-9+2$ $\frac{-7x}{-7}=\frac{-7}{-7}$ $x=1$	Check $2(1-1)-9(1)=-9$ $2(0)-9=-9$ $0-9=-9$ $-9=-9$ ✓ [3 marks]
d) $3(3w+8)=6(w-2)$ $9w+24=6w-12$ $9w+24-6w=6w-12-6w$ $3w+24=-12$ $3w+24-24=-12-24$ $\frac{3w}{3}=\frac{-36}{3}$ $w=-12$	$3(3\cdot -12+8)=6(-12-2)$ $3(-36+8)=6(-14)$ $3(-28)=-84$ $-84=-84$ ✓ [3 marks]
e) $-40+(2x+5)+x=-5$ $-40+2x+5+x=-5$ $-35+3x=-5$ $-35+3x+35=-5+35$ $\frac{3x}{3}=\frac{30}{3}$ $x=10$	$-40+(2\cdot 10+5)+10=-5$ $-40+(20+5)+10=-5$ $-40+25+10=-5$ $-15+10=-5$ $-5=-5$ ✓ [3 marks]

2. The equation $10+5x=75$ can be used to solve the following problem. EXPLAIN WHY.

The fine for speeding is in dollars, $5 for every km/h over the speed limit, plus a $10 processing fee. If Mr. Leon was caught speeding and was fined $75, by how much was he exceeding the speed limit? (2 marks)

In the equation the 10 represents the processing fee, which will be included in every fine. This is added to 5x. The 5 represents 5 dollars and x is the variable used to represent every km/h over the speed limit the driver (Mr. Leon) was driving. The equals 75 stands for the total fine paid by Mr. Leon.

3. For each problem, follow the four step problem solving process. (4 marks per problem)

1. Define a variable
2. Write an equation
3. Solve your equation. Write your answer in a meaningful way.
4. Check your answer

A. Find 3 consecutive integers whose sum is -15.

n = the least integer.

$n+(n+1)+(n+2)=-15$

$3n+3=-15$

$3n+3-3=-15-3$

$\frac{3n}{3}=\frac{-18}{3}$

$n=-6$

The 3 consecutive integers are −6, −5 and −4.

Check

$-6+(-6+1)+(-6+2)=-15$

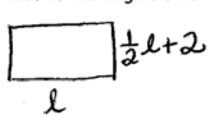
$-6+-5+-4=-15$

$-11+-4=-15$

$-15=-15$ ✓

B. The perimeter of a rectangular garden is 40 meters. The width is 2 meters more than one-half of the length. Find the length and width.

l = length of garden



$P=2l+2w$

$40=2l+2(\frac{1}{2}l+2)$

$40=2l+l+4$

$40=3l+4$

$40-4=3l+4-4$

$\frac{36}{3}=\frac{3l}{3}$

$l=12$

The length is 12m and the with is 8m.

Check

$40=2(12)+2(\frac{1}{2}\cdot 12+2)$

$40=24+2(6+2)$

$40=24+2(8)$

$40=24+16$

$40=40$ ✓

C. In the parking lot at a truck stop there were six more cars than 18-wheel trucks. There were 134 wheels in the parking lot. How many cars were there? How many trucks were there?

C = number of cars

$4c+18(c-6)=134$ ← number of trucks

$4c+18c-108=134$

$22c-108+108=134+108$

$\frac{22c}{22}=\frac{242}{22}$

$c=11$ — There fore, there are 11−6 trucks or 5 trucks.

car wheels: $11 \times 4 = 44$; 18 # of wheels $\times$ 5 trucks $= 90$; $44+90=134$ wheels

There are 11 cars and 5 trucks.

Check

$4\cdot 11+18(11-6)=134$

$44+18(5)=134$

$44+90=134$

$134=134$ ✓

D. A refrigerated truck leaves a rest stop travelling at a steady rate of 56 miles per hour. A car leaves the same rest stop ¼ hour later, following the truck at a steady rate of 64 miles per hour. How long after the truck leaves the rest stop will the car overtake the truck?

2 hours

distance truck travels = distance car travels

56 mi/h • truck's time = 64 mi/h • car's time

x = truck's time

$56\cdot x=64(x-\frac{1}{4})$

$56x=64x-16$

$56x-64x=64x-16-64x$

$\frac{-8x}{-8}=\frac{-16}{-8}$

$x=2$

The car will overtake the truck 2 hours after the truck leaves the rest stop.

Check.

$56\cdot 2=64(2-\frac{1}{4})$

$112=64(1\frac{3}{4})$

$112=112$ ✓