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Math SN4 Bridge

Quadratic Equations
Perfect Square Method
Extra Practice

#1 $x^2 = 100$

$$\sqrt{x^2} = \sqrt{100}$$

$x = 10$ | $x = -10$

The solutions are 10 & -10.

#2 $x^2 - 16 = 0$

$x^2 - 16 + 16 = 0 + 16$

$x^2 = 16$

$\sqrt{x^2} = \sqrt{16}$

$x = 4$	$x = -4$

The solutions are 4 & -4.

#3 $(y+1)^2=25$

$$\sqrt{(y+1)^2}=\sqrt{25}$$

$y+1=5$	$y+1=-5$
$y=4$	$y=-6$

The solutions are 4 & -6.

#4 $2j^2 = 32$

$$\frac{2j^2}{2} = \frac{32}{2}$$

$$j^2 = 16$$

$$\sqrt{j^2} = \sqrt{16}$$

$j = 4$ | $j = -4$

The solutions are 4 & -4.

#5 $3x^2 = 48$ $\frac{3x^2}{3} = \frac{48}{3}$

$x^2 = 16$

$\sqrt{x^2} = \sqrt{16}$

$x = 4$	$x = -4$

The solutions are 4 & -4.

#6 $y^2 + 5 = 54$

$y^2 + 5 - 5 = 54 - 5$

$y^2 = 49$

$\sqrt{y^2} = \sqrt{49}$

$y = 7$ | $y = -7$

The solutions are 7 & -7.

#7 $m^2 - 7 = 74$

$$m^2 - 7 + 7 = 74 + 7$$

$$m^2 = 81$$

$$\sqrt{m^2} = \sqrt{81}$$

$m = 9$ | $m = -9$

The solutions are 9 & -9.

#8 $\frac{s^2}{4} = 36$

$\frac{s^2}{4} = \frac{36}{1}$

Cross multiply

$s^2 = 144$

$\sqrt{s^2} = \sqrt{144}$

$s = 12$	$s = -12$

The solutions are 12 & -12.

#9 $\frac{n}{5} = \frac{20}{n}$

$\frac{n}{5} \times \frac{20}{n}$

Cross multiply

$n^2 = 100$

$\sqrt{n^2} = \sqrt{100}$

$n = 10$ | $n = -10$

The solutions are 10 & -10.

#10 $(x-3)^2=16$

$$\sqrt{(x-3)^2}=16$$

$(x-3)=4$	$(x-3)=-4$
$x-3+3=4+3$	$x-3+3=-4+3$
$x=7$	$x=-1$

The solutions are 7 & -1.

#11 - $0.1(x-2)^2+3=1.4$

$$-0.1(x-2)^2+3=1.4$$

$$-0.1(x-2)^2+3-3=1.4-3$$

$$\frac{-0.1(x-2)^2}{-0.1}=\frac{-1.6}{-0.1}$$

$$\sqrt{(x-2)^2}=\sqrt{16}$$

$(x-2)=4$	$(x-2)=-4$
$x-2+2=4+2$	$x-2+2=-4+2$
$x=6$	$x=-2$

The solutions are 6 & -2.

#12 $-0.25(x-6.2)^2+2.56=0$

$$-0.25(x-6.2)^2+2.56=0$$

$$-0.25(x-6.2)^2+2.56-2.56=0-2.56$$

$$\frac{-0.25(x-6.2)^2}{-0.25}=\frac{-2.56}{-0.25}$$

$$(x-6.2)^2=10.24$$

$$\sqrt{(x-6.2)^2}=\sqrt{10.24}$$

$(x-6.2)=3.2$

$x-6.2+6.2=3.2+6.2$

$x=9.4$

$(x-6.2)=-3.2$

$x-6.2+6.2=-3.2+6.2$

$x=3$

The solutions are 9.4 & 3.

#13 $4(x-20)^2-144=0$

$4(x-20)^2-144=0$

$4(x-20)^2-144+144=0+144$

$4(x-20)^2=144$

$\frac{4(x-20)^2}{4}=\frac{144}{4}$

$(x-20)^2=36$

$\sqrt{(x-20)^2}=\sqrt{36}$

$(x-20)=6$	$(x-20)=-6$
$x-20+20=6+20$	$x-20+20=-6+20$
$x=26$	$x=14$

The solutions are 26 & 14.

#14

$-(x-20)^2+576=0$

$-(x-20)^2+576=0$

$-(x-20)^2+576-576=0-576$

$-(x-20)^2=-576$

$\frac{-(x-20)^2}{-1}=\frac{-576}{-1}$

$(x-20)^2=576$

$\sqrt{(x-20)^2}=\sqrt{576}$

$(x-20)=24$	$(x-20)=-24$
$x-20+20=24+20$	$x-20+20=-24+20$
$x=44$	$x=-4$

The solutions are 44 & -4.

#15

$-0.02(x+5)^2=-2$

$-0.02(x+5)^2=-2$

$\frac{-0.02(x+5)^2}{-0.02}=\frac{-2}{-0.02}$

$(x+5)^2=100$

$\sqrt{(x+5)^2}=\sqrt{100}$

$(x+5)=10$	$(x+5)=-10$
$x+5-5=10-5$	$x+5-5=-10-5$
$x=5$	$x=-15$

The solutions are 5 & -15.