

## SOLVING EQUATIONS

03 MARCH 2014



### Lesson Description

In this lesson we:

- Solve Quadratic Equations
- Solve Simultaneous Equations
- Solve Word problems



### Summary

#### Solving Equations

- The highest power of the variable in an equation tells you what type of equation you are solving.
- A quadratic equation in standard form:  $ax^2 + bx + c = 0$
- To solve quadratic equations we apply the zero factor rule.
- Remember to include restrictions when solving fractional equations.
- You must have the same number of variables as you do equations to solve for different variables simultaneously.
- Word problems should first be translated into mathematical equations in order to be easily solved.



### Test Yourself

#### Question 1

$(x - 2)^2 = 36$  if  $x$  is a non-positive integer the solution to the equation is:

- A 8
- B -4
- C -8
- D 4

#### Question 2

The restrictions on the equation  $\frac{2}{x^2-x-6} = \frac{x}{2+x} + \frac{x}{3-x}$  are:

- A  $x \neq \frac{1}{4}; -3$
- B  $x \neq 6; -2$
- C  $x \neq -2; 3$
- D  $x \neq 0$

#### Question 3

If  $a^2 + b^2 = c^2$  then  $b =$

- A  $b = \pm\sqrt{c^2 - a^2}$
- B  $b = \pm\sqrt{c^2 + a^2}$
- C  $b = \pm\sqrt{a^2 - c^2}$
- D  $b = c^2 - a^2$

**Question 4**

The expression that represents the numerical value of a two digit number with tens digit  $x$  and units digit  $y$  is:

- A  $10(x+y)$
- B  $10x+y$
- C  $x+10y$
- D  $10xy$

**Question 5**

The values of  $x$  and  $y$  if  $x + 2y = 5$  and  $x - y = -1$  are:

- A  $x = 1; y = 2$
- B  $x = -2; y = -1$
- C  $x = -1; y = -2$
- D  $x = 2; y = 1$

**Improve your Skills****Question 1**

Solve for  $x$ :

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

**Question 2**

Find the values of  $x$  &  $y$  if:

$$3x + y = 2 ;$$

$$6x - y = 25$$

**Question 3**

Thabo hikes 41km in the Drakensberg Mountains, for the first part of the hike he walks at 4km/h. He then increases his walking speed to 5km/h for the remainder of the hike. If it takes him 9 hours to complete the hike, calculate the distance he covered at each speed.