

# Quadratic Relations Test 3A

Name \_\_\_\_\_

7 8 9 10 **11** 12



Navigator



Assessment



Student



25 min

## Question: 1

The equation  $(x-3)^2 + a = 0$  has roots:  $x=1$  and  $x=b$ , the values of  $a$  and  $b$  are therefore:

- a)  $a = 1$  and  $b = 3$                       b)  $a = 0$  and  $b = 3$                       c)  $a = 2$  and  $b = 5$   
d)  $a = -2$  and  $b = 5$                       e)  $a = -4$  and  $b = 5$

## Question: 2

The factorised form of  $y = (x-4)^2 - 9$  is:

- a)  $(x-2)(x-3)$                       b)  $(x+1)(x-7)$                       c)  $(x-1)(x-7)$   
d)  $(x+1)(x-7)$                       e)  $(x-1)(x+9)$

## Question: 3

The range of values of  $b$  such that  $y = x^2 + bx + 16$  has two distinct roots is:

- a)  $b > 8$                       b)  $|b| > 8$                       c)  $b \geq 8$   
d)  $b \geq \pm 8$                       e)  $b \in R$

## Question: 4

Which one of the following would result in irrational roots for  $x^2 + 6x + c = 0$

- a)  $c = 0$                       b)  $c = 9$                       c)  $c = -27$                       d)  $c = -91$                       e)  $c = -9$

## Question: 5

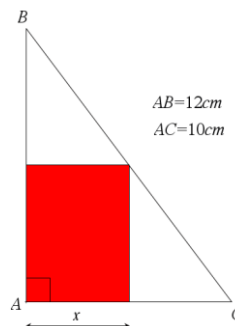
The equation:  $px^2 + (p+q)x + q = 0$  has rational roots when:

- a)  $p = 2$  and  $q = 3$                       b)  $p = -2$  and  $q = 3$   
c)  $p = \frac{2}{3}$  and  $q = \frac{1}{2}$                       d)  $p = -2$  and  $q = -3$   
e) All of the above

## Question: 6

The red rectangle is bound by triangle ABC. An expression for the area of the rectangle could be:

- a)  $Area = (12-x)(10-x)$   
b)  $Area = x(10-x)$   
c)  $Area = x(12-x)$   
d)  $Area = \frac{6}{5}x(10-x)$   
e)  $Area = \frac{5}{6}x(12-x)$



**Question: 7**

Given that  $4x^2 + ax + b = 0$  has one unique root and  $a + b = 21$  the values of  $a$  and  $b$  could be:

- a)  $a = 4$  and  $b = 17$
- b)  $a = -28$  and  $b = 49$  OR  $a = 12$  and  $b = 9$
- c)  $a = -28$  and  $b = 49$  only
- d)  $a = 12$  and  $b = 9$  only
- e)  $a = -4$  and  $b = 25$

**Question: 8**

Two consecutive positive integers are squared and added together, the result is 1105. The smaller of the two consecutive numbers is therefore:

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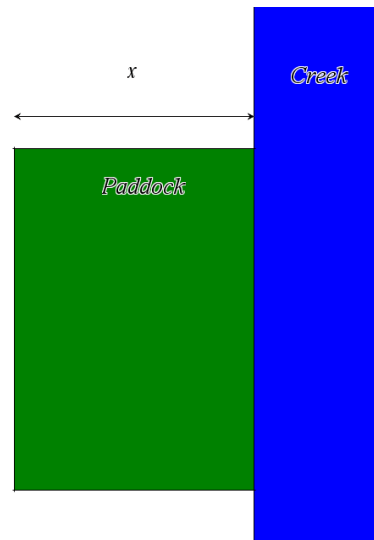
**Question: 9**

A right angled triangle has hypotenuse of length 29. The two shorter sides differ by just one unit. The shortest side is therefore equal to:

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**Question: 10**

Forty metres of fencing is available to form a paddock that is bound on one side by a creek. Write an expression for the area of the paddock.



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