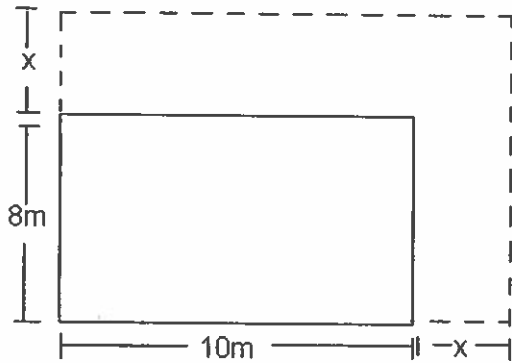


3. A rectangular garden has dimensions 10m by 8m. The gardener wants to put a flowerbed of uniform width along two adjacent sides of the garden as shown. If the area of the garden including his new strip is 168 m^2 , what is the width of the strip? (4 marks)



$$(8+x)(10+x) = 168$$

$$80 + 18x + x^2 = 168$$

$$x^2 + 18x - 88 = 0$$

$$(x - 4)(x + 22) = 0$$

12. What are the roots of $2x^2 - 5x - 3 = 0$?

12. C

- A) $\{6, -1\}$ B) $\{-6, 1\}$
C) $\{-\frac{1}{2}, 3\}$ D) $\{\frac{1}{2}, -3\}$

13. Which statement is TRUE of the function $y = -2x^2 + 3$?

13. A

- A) The parabola opens down and has a y-intercept of 3, therefore it crosses the x-axis twice.
B) The parabola has a discriminant of -24, therefore has two real roots.
C) The parabola opens down and has a y-intercept of -3, therefore it does not cross the x-axis.
D) The parabola has x-intercepts at -2 and 3.

Part B: Short Answer Questions Complete each of the following in the space provided.
Be sure to show ALL necessary workings to receive full credit. (12 marks)

1. Factor completely. $2(x + 5)^2 + 3(x + 5) - 2$ (4 marks)

$$\begin{aligned} & 2a^2 + 3a - 2 \\ & (2a - 1)(a + 2) \\ & (2(x+5) - 1)(x+5+2) \\ & (2x+9)(x+7) \end{aligned}$$

2. Algebraically determine the EXACT roots in simplest form for: (4 marks)

$$\begin{aligned} 6(2-x) &= 3x^2 + 6x \\ 12 - 6x &= 3x^2 + 6x \\ 3x^2 + 12x - 12 &= 0 \\ x^2 + 4x - 4 &= 0 \\ x &= \frac{-4 \pm \sqrt{16 - 4(1)(-4)}}{2} \\ &= \frac{-4 \pm \sqrt{32}}{2} \\ &= \frac{-4 \pm 4\sqrt{2}}{2} \\ &= -2 \pm 2\sqrt{2} \end{aligned}$$

7. The length of a rectangular parking lot is three more than twice its width. If the area is 96 m^2 , which equation would be used to determine the dimensions?

7. A

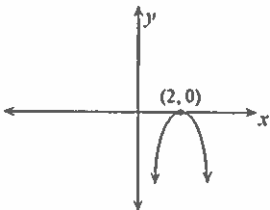
- A) $x(2x + 3) = 96$
- B) $2x(x + 3) = 96$
- C) $x(3x + 2) = 96$
- D) $y(2x + 3) = 96$

8. A quadratic equation $f(x) = 0$ has two different real roots.

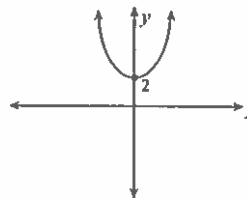
8. C

Which is the graph of $f(x)$?

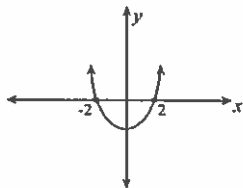
A)



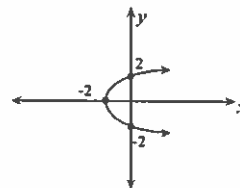
B)



C)



D)



9. Given the quadratic equation $2x^2 - 4x + c = 0$, find the value of c if the equation has two equal real roots.

9. B

- A) $c = -2$
- B) $c = 2$
- C) $c = -\frac{1}{2}$
- D) $c = \frac{1}{2}$

10. Given the function $g(x) = -4(x-1)^2 + 8$ what is the nature of the roots of $g(x) = 0$?

10. D

- A) no real roots
- B) one real root
- C) real and equal
- D) real and unequal

11. If $x = 5$ is one root of the equation $x^2 + kx + 40 = 0$, what is the value of 'k'?

11. A

- A) -13
- B) -10
- C) 10
- D) 13

Unit Test – Quadratic Equations

Name: Key

Part A: Multiple Choice Place the letter that corresponds with the correct answer in the space provided to the right. (13 marks)

___/25 = %

1. What value of c makes the expression $x^2 + 9x + c$ a perfect square?

1. C

A) $\frac{9}{2}$

B) 9

C) $\frac{81}{4}$

D) 81

2. Factor $-3x^2 + 6x + 24$ completely.

2. A

A) $-3(x - 4)(x + 2)$

B) $-3(x + 4)(x - 2)$

C) $-3(x - 4)(x - 2)$

D) $-3(x + 4)(x + 2)$

3. What are the roots of $x^2 = 5x + 14$?

3. C

A) $x = -2$ and $x = -7$

B) $x = -7$ and $x = 2$

C) $x = 7$ and $x = -2$

D) $x = 7$ and $x = 2$

4. What is the simplest form of $\frac{-5 \pm \sqrt{75}}{5}$?

4. D

A) $1 \pm 5\sqrt{3}$

B) $-1 \pm 5\sqrt{3}$

C) $-1 \pm \sqrt{75}$

D) $-1 \pm \sqrt{3}$

5. What are the zeros of $y = (x - 2)(2x + 3)$?

5. D

A) $\{-2, \frac{2}{3}\}$

B) $\{-2, \frac{3}{2}\}$

C) $\{2, -\frac{2}{3}\}$

D) $\{2, -\frac{3}{2}\}$

6. What are the roots of $0 = 2x^2 - 36$?

6. A

A) $\pm 3\sqrt{2}$

B) $3\sqrt{2}$

C) ± 6

D) $\pm 6\sqrt{2}$