**B**

$$\frac{-4}{4} \frac{3}{-1} = 3 ✓$$

11. Factor: $2x^2 + 3x = 2$ → 3 terms → $a \neq 1$

(A) $(2x + 1)(x + 2)$    (B) $(2x - 1)(x + 2)$ — rewrite ✓
(C) $(x - 1)(x + 4)$    (D) $(x + 1)(x - 4)$ — GCF (other than 1)

$$2x^2 + 3x = 2$$
$$-2 \quad -2$$
$$2x^2 + 3x - 2 = 0$$
$$a \qquad b \qquad c$$

$-4$ (x)   $+4$   a·c $-1$   b   ③ (+)

$-1(2x)$

$(\frac{x}{a} + 2)$ — X-method ✓

| | | |
|---|---|---|
| | $2x^2$ | $4x$ |
| $-1$ | $-1x$ | $-2$ |

— box method

**B**

12. When using the X-Method to factor the above trinomial, which number did you place in the **bottom** of the X?    $2x^2 + 3x = 2$

(A) 2    (B) 3
(C) -4    (D) -2

---

**C**

(zeros)    a   b   c

13. Solve by factoring: $x^2 - 2x - 15 = 0$ → 3 terms → $a = 1$; X-method

(A) $x = -5$ and $x = 3$   $a = 1$   $b = -2$    (B) $x = -5$ and $x = 10$
(C) $x = 5$ and $x = -3$   $c = -15$    (D) $x = 5$ and $x = -10$

$-15$ (x)   $+3$ a·c $-5$   b   $-2$ (+)

| (x) | (+) |
|---|---|
| $-15$ | $-2$ |

$3 + -5 = -2$ ✓

$(x + 3) = 0$
$-3 \quad -3$
$x = -3$

$(x - 5) = 0$
$+5 \quad +5$
$x = 5$

14. What is the best method in order to factor to solve the following equation: $x^2 - 12x = -32$? → 3 terms

            a   b   c

(A) Factoring trinomials when $a = 1$    (B) GCF Method
(C) Factoring trinomials when $a \neq 1$    (D) Difference of Two Squares

$a = 1$
$b = -12$
$c = -32$

(zeroes)

(No Factors, Only Solutions)

**NON-Factorable Methods:** — Completing the Square

- Finding Square Roots (no a, b & c)
- Quadratic Formula (a, b & c terms)

**D**

15. Solve: $2x^2 - 5 = 13$ — Finding Square Roots

(A) $x = 5$ and $-5$    (B) $x = \frac{\sqrt{13}}{2}$ and $-\frac{\sqrt{13}}{2}$
(C) $x = 9$ and $-9$    (D) $x = 3$ and $-3$

$$2x^2 - 5 = 13$$
$$+5 \quad +5$$
$$2x^2 = 18$$
$$\frac{2x^2}{2} = \frac{18}{2}$$
$$x^2 = 9$$

$$\sqrt{x^2} = \sqrt{9}$$
$$x = \pm 3 \text{ OR}$$
$$x = 3 \text{ and } x = -3$$

$Ax^2 + Bx + C$

$Ax^2 + Bx + C$

**D**

**16.** Solve: $(x-5)^2 = 9$ — Finding Square Roots

(A) $x = 8$  (B) $x = 5 \pm \sqrt{3}$
(C) $x = 8$ and $-8$  (D) $x = 8$ and $2$

$\sqrt{(x-5)^2} = \sqrt{9}$

$x - 5 = \pm 3$

$x - \cancel{5} = +3$
$\phantom{x} +5 \quad +5$
$x = 8$

$x - \cancel{5} = -3$
$\phantom{x} +5 \quad +5$
$x = 2$

---

**B**

**17.** Solve: $3x^2 = 12$ — same as #16

(A) $x = 2$  (B) $x = 2$ and $-2$
(C) $x = -2$  (D) $x = 4$

$\dfrac{\cancel{3}x^2}{3} = \dfrac{12}{3}$

$\sqrt{x^2} = \sqrt{4} \qquad x = \pm 2$

---

**B**

**18.** Solve using Quadratic Formula ~~by your method of preference~~: $x^2 - 10x - 6 = -11$

(A) $x = -5 \pm 2\sqrt{5}$  (B) $x = 5 \pm 2\sqrt{5}$
(C) $x = 0$ and $x = -10$  (D) $x = 0$ and $x = 10$

$x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$x^2 - 10x - 6 = -11$
$\phantom{x^2 - 10x} +11 \quad +11$

$x^2 - 10x + 5 = 0$

$a = 1 \quad b = -10 \quad c = 5$

$x = \dfrac{-(-10) \pm \sqrt{(-10)^2 - 4(1)(5)}}{2(1)}$

$x = \dfrac{10 \pm \sqrt{(-10)^2 - 4(1)(5)}}{2}$

plug in calc

$x = \dfrac{10 \pm 4\sqrt{5}}{2}$

$\boxed{x = 5 \pm 2\sqrt{5}}$

---

**A**

**19.** What is the solution to the equation: $3x^2 + 5x + 1 = 0$? → Quadratic Formula

(A) $x = \dfrac{-5 \pm \sqrt{13}}{6}$  (B) $x = \dfrac{5 \pm \sqrt{13}}{6}$

(C) $x = \dfrac{-5 \pm \sqrt{37}}{6}$  (D) $x = \dfrac{5 \pm \sqrt{37}}{6}$

$a = 3$
$b = 5$
$c = 1$

$x = \dfrac{-(5) \pm \sqrt{(5)^2 - 4(3)(1)}}{2(3)}$

plug in calc

$\boxed{x = \dfrac{-5 \pm \sqrt{13}}{6}}$

---

**20.** What are the ~~zeros~~ of the quadratic equation: ~~$x^2 + 10x - 24 = 0$~~? $3x^2 + 9x - 1 = 0$

factors — ( )( )

3 terms → $a \neq 1$

(A) ~~$x = -2$ and $12$~~  (B) ~~$x = 4$ and $6$~~
(C) ~~$x = 2$ and $12$~~  (D) ~~$x = -4$ and $-6$~~

$(\times) \quad (+)$

$\dfrac{-3}{(\times)}$  $\dfrac{-3 \mid 9}{}$

$\dfrac{a \cdot c}{b}$  $= \cancel{-1 + 3 = 2}$
$9$  $\cancel{1 - 3 = -2}$

$(+)$

**No Factors → Unfactorable**