$$|x| = 5$$

$$x = 5 \quad , \quad x = -5$$

$$|x| < 5$$

$$-5 < x < 5$$

$$|x| > 5$$

$$x > 5 \quad , \quad x < -5$$

$|x| = 5$

$x = 5 \qquad x = -5$

$|x| < 5$

$-5 < x < 5$

$|x| > 5$

$x > 5 \quad , \quad x < -5$

1

If $|2b - 1| \leq 3$, how many possible integer values of b are there?

$-3 \overset{+1}{\leq} 2b - 1 \leq 3 \; +1$

$\dfrac{-2}{2} \leq \dfrac{2b}{2} \leq \dfrac{4}{2}$

$\boxed{-1 \leq b \leq 2}$

$-1, 0, 1, 2$

$\boxed{4}$

2

If $|2x - 3| \leq 4$, what is the greatest possible value of $|3x - 2|$? **(Grid in)**

$-4 \overset{+3}{\leq} 2x - 3 \leq 4 \; +3$

$\dfrac{-1}{2} \leq \dfrac{2x}{2} \leq \dfrac{7}{2}$

$\boxed{-\dfrac{1}{2} \leq x \leq \dfrac{7}{2}}$

$\left| 3\left(\dfrac{7}{2}\right) - 2 \right|$

$= 8.5$

3

If $|-2b - 3| \leq 7$, how many possible integer values of b are there?

$-7 \overset{+3}{\leq} -2b - 3 \leq 7 \; +3$

$\dfrac{-4}{-2} \leq \dfrac{-2b}{-2} \leq \dfrac{10}{-2}$

$2 \geq b \geq -5$

$= 5, -4, -3, -2, -1, 0, 1, 2$

$\boxed{8}$

4

If $|4x + 2| \leq 10$, How many possible values of x are there?

$-10 \leq 4x + 2 \leq 10 \quad -2$

$\dfrac{-12}{4} \leq \dfrac{4x}{4} \leq \dfrac{8}{4}$

$-3 \leq x \leq 2$

$\boxed{6}$

$-3, -2, -1, 0, 1, 2$

5

If a is a solution of the equation $|2x - 4| = 5$, what is the distance between a and the point of coordinate 2 on the number line?
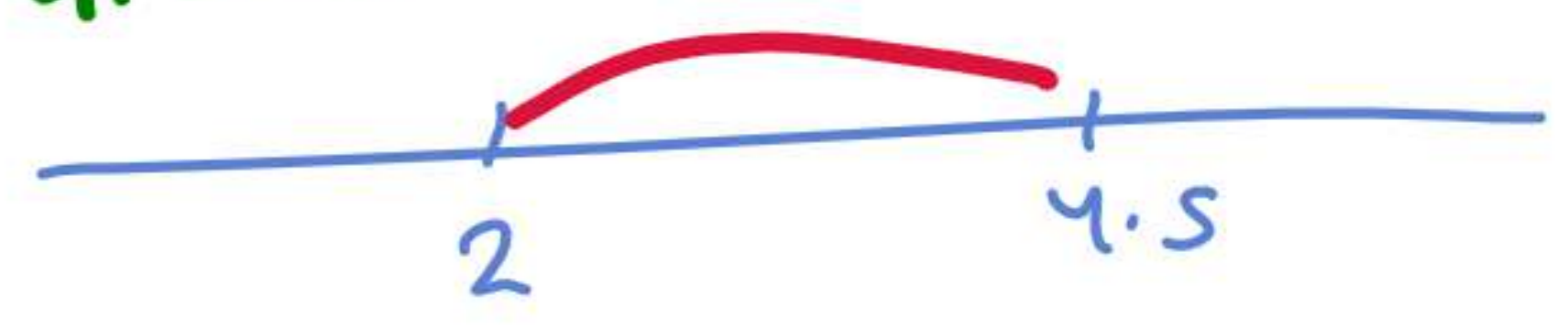
A. 0.5
(B) 2.5
~~C.~~ 4.5
D. 5

$2x - 4 = 5$

$2x = 9$

$x = 4.5$

$4.5 - 2 = 2.5$

$2x - 4 = -5$

(number line showing 2 and 4.5)

$1x + 2x^4 + 5x - 1x^4$

$= 6x + x^4$

$(2x + 9) - (5x + y + 4)$

$-3x + 5 - y$

$2x(5y - 3x + 9)$

$10xy - 6x^2 + 18x$

ELKABLY TEAM

Math is Root of Knowledge

MATH = $\sqrt{}$ KNOWLEDGE

1

$$(3q + 7r)(q - 5r + 3)$$

Which of the following polynomials is equivalent to the expression above?

21r

A) $4q + 2t + 3$

B) $3q^2 - 15qr + 9q + 7r$

C) $3q^2 + 6q - qr - 12r^2 + 10r$

D) $3q^2 + 9q - 8qr - 35r^2 + 21r$

3

$$(2x - 1)(x + 5)$$

The given expression is equivalent to $ax^2 + bx + c$, where a, b and c are constants. What is the value of b?

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

$2x^2 + 9x - 5$

$b = 9$

2

Ibrahim is *x* years old and Jamil is seven years younger. In five years, how old will Jamil be?

$J = x - 7 + 5$

$= x - 2$

A. $x + 2$

B. $x - 2$

C. $2x - 2$

D. $x + 5$

4

If $p(x) = (x^2 - 7x + 5)$ and $q(x) = (-3x^3 - 7x^2 + 2x - 5)$ which of the following expressions is equal to the difference $p(x) - q(x)$?

$x^2 + 7x^2$

$= 8x^2$

A. $4x^3 - 9x + 10$

B. $-3x^3 - 6x^2 - 5x$

C. $-3x^3 + 8x^2 + 9x - 10$

D. $3x^3 + 8x^2 - 9x + 10$

5

Which of the following is equivalent to $4a^2 - 9 + (2a - 3)(a - 1) + 3(2a - 3)$?

handwritten: $4a^2 + 2a^2 = 6a^2$

A. $(3a + 5)(2a - 3)$
B. $2(3a + 5)(2a - 3)$ *$12a^2$ | $-9 + 3 - 9$*
C. $(2a - 3)(a + 5)$ *$2a^2$ | $= -15$*
D. $(2a - 3)(3a + 7)$

(B and C crossed out)

6

$$25x^2 - tx + 4 = (5x - 2)(ax + b)$$

handwritten above: 5, -2

In the equation above, a, b and t are constant numbers.
What is the value of t?

A. 5
B. -2
C. 20 *(circled)*
D. -15

handwritten:
$(5x - 2)(5x - 2)$
$25x^2 - 10x - 10x + 4$
$25x^2 - 20x + 4 = 25x^2 - tx + 4$
$20 = t$

7

What is the coefficient of x^3 when $\frac{2}{5}x^3 + 2x^2 - 3$ is multiplied by $5x + \frac{2}{5}$?

A. 10
B. $\frac{4}{25}$
C. $\frac{54}{5}$
D. $\frac{254}{25}$ *(D circled)*

handwritten:
$\left(\frac{2}{5}x^3 + 2x^2 - 3\right)\left(5x + \frac{2}{5}\right)$
$\frac{2}{5} \times \frac{2}{5}x^3 + 10x^3$
$\frac{4}{25}x^3 + \frac{10 \times 25 x^3}{1 \times 25}$
$\frac{4}{25}x^3 + \frac{250}{25}x^3 = \frac{254}{25}$

8

What is the resulting coefficient of x when -2x+3 is multiplied by -3x-2?

A. -9
B. -5 *(circled)*
C. 5
D. 6

handwritten:
$(-2x + 3)(-3x - 2)$
$4x - 9x$
$= -5x$

9

$$5x^2 - 3(1 - x) - 2x(x + 5)$$

Which of the following polynomials is equivalent to the expression above?

A) $3x^2 - 7x - 3$ *(circled)*
B) $3x^2 + 7x - 3$
C) $5x^2 - 5x - 3$
D) $5x^2 - 9x - 3$

handwritten:
$5x^2 - 3 + 3x - 2x^2 - 10x$
$3x^2 - 7x - 3$

10

The difference between twice a number and two is three times the number. Which of the following represents the equation that can be used to solve the number?

A. $2x - 2 = 3(x - 2)$ *handwritten: $2x - 2 = 3x$*
B. $2 - 2x = 3$
C. $2x - 2 = 3x$ *(circled)*
D. $2x - 3x = 3 + x$

Mr. Kably