

TMT V4 First 20 Algebra Prep

1. Solve $-2n - 10 < -1$ [82]

DIVIDE by neg... $+10$ $+10$
 Switch sign $\rightarrow -2n < 9$
 $n > -\frac{9}{2}$ (AKA -4.5)

2. Multiply $(x-9)^2$ [61]

$(x-9)(x-9)$
 $x^2 - 9x - 9x + 81 = x^2 - 18x + 81$

3. Find the slope if given two points, (-7, 2)

and (6, 4) [210]
 $M = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4 - 2}{6 - (-7)} = \frac{2}{13}$

4. Evaluate $f(x) = -2x^2 - x - 1$ if $x = -2$

[110]
 $-2(-2)^2 - (-2) - 1$
 $-8 + 2 - 1 = -7$

5. Simplify $\frac{1}{4} \cdot \frac{7}{6}$ [42]

$\frac{1 \cdot 7}{4 \cdot 6} = \frac{7}{24}$

6. Simplify $\frac{-5 \pm 5\sqrt{2}}{15}$ [214]

factor $\rightarrow \frac{5(-1 \pm \sqrt{2})}{5 \cdot 3} = \frac{-1 \pm \sqrt{2}}{3}$

7. Multiply $(2x-9)(x+3)$ [60]

$2x^2 + 6x - 9x - 27$
 $2x^2 - 3x - 27$

8. Solve. Show 3+ steps of work [89]

$-5 - (x-2) = 5x + 9$
 $-5 - x + 2 = 5x + 9$
 $-x - 3 = 5x + 9$
 $+x$
 $-3 = 6x + 9$
 $-12 = 6x$
 $\frac{-12}{6} = \frac{6x}{6}$
 $-2 = x$

9. Simplify $\frac{2}{7} \cdot \frac{14}{3}$ [50]

$\frac{2}{7} \cdot \frac{14}{3} = \frac{28}{21} = \frac{4 \cdot 7}{3 \cdot 7} = \frac{4}{3} = 1\frac{1}{3}$

10. Factor out a GCF $\frac{3x^2}{3x} - \frac{12x}{3x} + \frac{9bx}{3x}$ [58]

$3x(x - 4 + 3b)$

11. Simplify $(6a^7b^4)^2 \cdot b^4$ [206]

$36a^{14}b^8 \cdot b^4 = 36a^{14}b^{12}$

12. Find the following: $\frac{2y}{2} = \frac{8x-6}{2}$ [135]

Slope: 4
 Y-Intercept: (0, -3)
 $y = 4x - 3$

13. Solve $(3x+5)(x-2) = 0$ [85]

$3x+5=0$ $x-2=0$
 $-5 -5$ $+2 +2$
 $\frac{3x}{3} = \frac{-5}{3}$ $x = 2$
 $x = -\frac{5}{3}$

14. Solve $|x-1| = 10$ [84]

$x-1=10$ $x-1=-10$
 $+1 +1$ $+1 +1$
 $x=11$ $x=-9$

15. Solve $x^2 - 2x - 6 = 4$ [88]

$x^2 - 2x - 10 = 0$
 $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
 $= \frac{-(-2) \pm \sqrt{4 - 4(1)(-10)}}{2(1)}$
 $= \frac{2 \pm \sqrt{4 + 40}}{2}$
 $= \frac{2 \pm \sqrt{44}}{2}$
 $= \frac{2 \pm 2\sqrt{11}}{2}$
 $= \frac{2(1 \pm \sqrt{11})}{2}$
 $= 1 \pm \sqrt{11}$

16. Simplify $\frac{(x-9)(x+2)}{(x-2)(x+2)}$ [209]

$\frac{x-9}{x-2}$

17. Simplify $\frac{3}{7} + \frac{5}{2}$ [39]

$\frac{2 \cdot 3}{2 \cdot 7} + \frac{5 \cdot 7}{2 \cdot 7}$
 $\frac{6}{14} + \frac{35}{14} = \frac{41}{14}$

18. Factor $x^2 - 7x - 8$ [53]

$(x+1)(x-8)$

19. Simplify $\frac{18x^3}{20x^7}$ [74]

$\frac{9 \cdot 2 \cdot x^3}{10 \cdot 2 \cdot x^3 \cdot x^4} = \frac{9}{10x^4}$

20. Simplify (PEMDAS) $2(5 - 2(x+3))$ [212]

$2(5 - 2x - 6)$
 $2(-2x - 1)$
 $-4x - 2$