

Middleton Algebra 1 3/8/2003 Individual P1

MARCH 2003 INDIVIDUAL

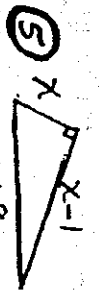
1 B $x-3$
 CD x
 V $x+17$

2 (3,2) (5,10)
 $m = \frac{8}{2} = 4$
 $A(-1, -6)$
 $(3,2)$
 $m = \frac{-4}{2} = -2$
 $B(0,10)$

(3,2) C (1, -5)
 $m = \frac{-2}{1} = -2$
 $D(4, 6)$
 $m = \frac{4}{4} = 1$

3 24A³B - 32A²B² - 6AB³
 24B(12A² - 16AB - 3B²)
 24B(6A + B)(2A - 3B)

4 $\frac{x+3}{2} - \frac{3}{x+3} = \frac{12}{x^2-9}$
 $2x+6 - 3x+9 = 12$
 $-x+15 = 12$
 $-x = -3$
 $x = 3$



5 $\frac{II}{I} + \frac{II}{II} = 1$ SHORTCUT
 $\frac{x}{x} + \frac{x}{x} = 1$

6 $x^2 + (x-1)^2 = (x+8)^2$
 $x^2 + x^2 - 2x + 1 = x^2 + 16x + 64$
 $x^2 - 18x - 63 = 0$
 $(x-21)(x+3) = 0$
 $x = 21$
 $x = -3$

7 $x = 12$

8 $x = 8-3 = 5$
 $5+y = 9$
 $y = 4$

9 $x+f = \frac{29}{70}$

10 $x = 8-3 = 5$
 $5+y = 9$
 $y = 4$

11 $3x^2 - 15 = -6x$
 $3x^2 + 6x = 15$
 $x^2 + 2x = 5$
 $(x+1)^2 = 6$
 $x+1 = \pm\sqrt{6}$
 $x = -1 \pm \sqrt{6}$
 $A = -1$
 $B = 6$

COMPLETE THE SQUARE

12 $\frac{5}{2-\sqrt{2}} \left(\frac{2+\sqrt{2}}{2+\sqrt{2}} \right)$
 $\frac{10+5\sqrt{2}}{4-2}$
 $\frac{10+5\sqrt{2}}{2}$

13 $A=10$
 $B=5$
 $C=2$
 $A+B+C = 17$



$(40+2x)(30+2x) - 40(30) = 296$

$1200 + 140x + 4x^2 - 1200 = 296$
 $4x^2 + 140x - 296 = 0$
 $x^2 + 35x - 74 = 0$
 $(x+37)(x-2) = 0$
 $x = -37$
 $x = 2$

14 $\sqrt{27x} - \sqrt{48x} + \sqrt{75x}$
 $\sqrt{9} \sqrt{3x} - \sqrt{16} \sqrt{3x} + \sqrt{25} \sqrt{3x}$
 $(3-4+5)\sqrt{3x}$
 $4\sqrt{3x}$
 $A=4$
 $B=3$
 $A \cdot B = 12$

15 $V = K R T^3$
 $\frac{4000\pi}{3} = \frac{K(10)\pi}{1}$
 $K = \frac{4}{3}$
 $V = \frac{4}{3} \pi r^3$
 $V = \frac{4}{3} \pi (30)^3$
 $= \frac{4}{3} \pi (27000)$

16 $V = 36000 \pi$

SHORTCUT
 JUST KNOW $V = \frac{4}{3} \pi r^3$

17 $\frac{1}{x} + \frac{1}{x+1} = \frac{17}{x(x+1)}$
 $x+1 + x = 17$
 $2x = 16$
 $x = 8$
 $8 \cdot 9 = 72$
 $8+9 = 17$

18 $8 \cdot 9 = 72$
 $8+9 = 17$

remember

remember

14 $\frac{II}{F} + \frac{II}{S} = 1$

$\frac{4}{x} + \frac{4}{3x} = 1$
 $\frac{4}{3x} + \frac{4}{3x} = 1$
 $\frac{4}{3x} + \frac{4}{3x} = 1$

$4 + 4 = 3x$
 $8 = 3x$
 $x = \frac{8}{3}$

15 $\frac{II}{F} + \frac{II}{S} = 1$
 LTRV PASSES THRU
 $(\frac{13}{2}, \frac{4}{2}) \rightarrow (\frac{13}{2}, 2)$
 $(2, 5), (\frac{13}{2}, 2)$

$m = \frac{5-2}{2-\frac{13}{2}} = \frac{3}{-\frac{9}{2}} = -\frac{2}{3}$
 $m = -\frac{2}{3}$ pt $(3, 5)$
 $2x + 3y = 19$
 $x = 0$ $\frac{3y}{3} = \frac{19}{3}$ $y = \frac{19}{3}$

16 $f(x) = 2x^2 - x - 6$
 $f(x+1) = 2(x+1)^2 - (x+1) - 6$
 $= 2x^2 + 4x + 2 - x - 1 - 6$
 $5(x+1) = 2x^2 + 3x - 5$
 $(2x + 5)(x - 1)$

17 $x = -\frac{2}{3}$ $x = 1$
 $3x - 2 = 0$ $x - 1 = 0$
 $(3x - 2)(x - 1) = 0$
 $3x^2 - 5x + 2 = 0$
 $3x^2 - 5x + 2 = 0$

18 $(1 - \sqrt{y-5})^2 = \sqrt{y-2}$
 $1 - 2\sqrt{y-5} + y - 5 = y - 2$
 $-2\sqrt{y-5} - y = -2$
 $-2\sqrt{y-5} = y - 2$
 $\sqrt{y-5} = \frac{2-y}{2}$
 $y - 5 = \frac{(2-y)^2}{4}$
 $4(y-5) = (2-y)^2$
 $4y - 20 = 4 - 4y + y^2$
 $y^2 - 8y + 24 = 0$
 $(y-4)(y-6) = 0$
 $y = 4, 6$

19 $128 - y > -5$
 WHEN IS A POSITIVE (-) ?
 GREATER THAN A NEGATIVE (-) ?
 ALLOW AYS ANS. R (ALL REAL NUMBERS) (E)

28 $(4x-1)^2 - (3x+2)^2 = (7x+4)(x-1)$
 $(4x-1)^2 - (3x+2)^2 = (7x+4)(x-1)$
 $(4x-1)^2 - (3x+2)^2 = (7x+4)(x-1)$

20 $\frac{A-C}{A+C} = \frac{3}{5}$
 $3A + 3C = 5(A - C)$
 $3A + 3C = 5A - 5C$
 $2A = -8C$
 $A = -4C$

$\frac{A-C}{A+C} = \frac{3}{5}$
 $\frac{-4C-C}{-4C+C} = \frac{3}{5}$
 $\frac{-5C}{-3C} = \frac{3}{5}$
 $\frac{5}{3} = \frac{3}{5}$
 $25 = 9$
 No solution

22 $x^2 = 3$ $x = \frac{2}{5}$
 $x^2 \cdot x^5 = 3$
 $x^7 = 3$
 $x = \sqrt[7]{3}$

$x^2 = \frac{3y}{2}$
 $x = \sqrt{\frac{3y}{2}}$

$x = \frac{\sqrt{6y}}{2}$

25 $M = 1.1y$
 $N = 1.2x$
 $M \cdot N = (1.1)(1.2)xy$
 $MN = 1.32xy$
 32%

26 $\frac{2\sqrt{24} \sqrt{6} - 4\sqrt{3} \sqrt{24}}{\sqrt{8}} + \frac{5\sqrt{2} \sqrt{24} \sqrt{2}}{\sqrt{8}}$
 $\frac{2\sqrt{24} \sqrt{6} - 4\sqrt{3} \sqrt{24}}{\sqrt{8}} + \frac{5\sqrt{2} \sqrt{24} \sqrt{2}}{\sqrt{8}}$
 $\frac{2\sqrt{24} \sqrt{6} - 4\sqrt{3} \sqrt{24}}{\sqrt{8}} + \frac{5\sqrt{2} \sqrt{24} \sqrt{2}}{\sqrt{8}}$

27 $(\sqrt{3} + \sqrt{2})^2 + 2$
 $3 + 2\sqrt{6} + 2 + 2$
 $5 + 2\sqrt{6}$

21 $2x^5 - 26x^3 + 72x = 0$
 $2x(x^4 - 13x^2 + 36) = 0$
 $2x(x^2 - 9)(x^2 - 4) = 0$
 $2x(x+3)(x-3)(x+2)(x-2) = 0$
 $x = 0, -3, 3, -2, 2$
 sum is 0

23 $\sqrt{3}$ Even power
 $2^4, 5^3, 3^0$
 Any power
 $\sqrt{9}$ $1, 3, \dots, 10$
 10

24 $\frac{(2x)^3}{x^2 \cdot y^{-x-y}} = \frac{2}{4^{-2y}}$
 $\frac{8x^3}{x^2 \cdot y^{-x-y}} = \frac{2}{4^{-2y}}$
 $\frac{8x^3}{x^2 \cdot y^{-x-y}} = \frac{2}{4^{-2y}}$

$2 \cdot 6x \cdot y^{+2y} = 2 \cdot 6x \cdot (2^2)^{2y}$
 $2 \cdot 6x \cdot y^{+2y} = 2 \cdot 6x \cdot 4^{2y}$
 $2 \cdot 2 \cdot y^x = 2$

$(\frac{2}{3} - \frac{2}{A^2} + \frac{5A}{4}) \sqrt{2AB}$

29 $5x + 12 = 3x$
 $2x = -12$
 $x = -6$
 $2x = -12$
 $x = -6$
 Nathan's
 $x + 12 = 3x$
 $2x = 12$
 $x = 6$

30 $x^2(x+1) - 9(x+1)$
 $(x^2 - 9)(x+1)$
 $(x-3)(x+3)(x+1)$