

mu App.

Solutions

1995 TEST

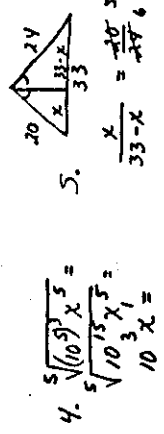
1.  $(n-2)180$   
 $(6-2)180 = 720$   
 $2x + 4x + 2x + 5x + 6x = 720$   
 $2x = 720$   
 $3x = 80$   
 $x = \frac{80}{3}$

2.  $(a\sqrt{b} + c\sqrt{d})(a\sqrt{b} - c\sqrt{d})$   
 $a^2b - ac\sqrt{bd} + ac\sqrt{bd} - c^2d$   
 $a^2b - c^2d$

3.  $AM = \frac{b+c}{2}$   
 $OM = \frac{a}{2}$   
 $AB \parallel MN$   
 $\frac{AM}{AB} = \frac{OM}{AC}$   
 $\frac{b+c}{2} = \frac{a}{2}$   
 $b+c = a$

4.  $\frac{\sqrt{(10)^2 + 5^2}}{10} = \frac{5}{10}$   
 $\frac{\sqrt{125}}{10} = \frac{5}{10}$   
 $\frac{5\sqrt{5}}{10} = \frac{5}{10}$   
 $\frac{\sqrt{5}}{2} = \frac{5}{10}$

5.  $15 = 7(5+3x) = 12 + 21x + 14$   
 $15 - 35 - 21x = 12 + 21x + 14$   
 $-21x - 20 = 2x + 26$   
 $-23x = 46$   
 $x = -2$



6.  $15 = 7(5+3x) = 12 + 21x + 14$   
 $15 - 35 - 21x = 12 + 21x + 14$   
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 $x = -2$

7.  $11x = 5.33$   
 $x = 15$   
 $6x = 5.33 - 5x$

8.  $1 + \frac{2+3}{y-2} = \frac{3y-3}{6-y}$   
 $(y-2)(6-y) + (y+3)(6-y) = (3y-3)(y-2)$   
 $-y^2 + 8y - 12 - y^2 + 3y + 18 = 3y^2 - 9y + 6$   
 $-2y^2 + 11y = 3y^2 - 9y + 6$   
 $0 = 5y^2 - 20y + 6$   
 $0 = y^2 - 4y = y(y-4)$   
 $y = 0$  or  $y = 4$

9. Figure  
 Square side  $\cdot \sqrt{2}$   
 Cube side  $\cdot \sqrt{3}$   
 Hypocrite side  $\cdot \sqrt{4}$   
 $5 \cdot 2 = 10$

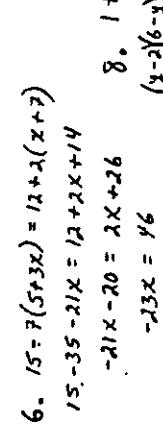
10.  $\frac{8 \cdot 7}{10} = \frac{x \cdot 12}{5}$   
 $\frac{56}{10} = \frac{12x}{5}$   
 $5.6 = 12x$   
 $x = \frac{5.6}{12} = \frac{14}{30} = \frac{7}{15}$

11.  $\frac{1}{2}h(b_1 + b_2 + \sqrt{b_1 b_2}) = V$   
 $\frac{1}{2}h(9\pi + 25\pi + \sqrt{9\pi \cdot 25\pi}) = 196\pi$   
 $\frac{1}{2}h(34\pi + 15\pi) = 196\pi$   
 $\frac{1}{2}h(49\pi) = 196\pi$   
 $h = 8$

12.  $A \# B = A^{-1} + B$   
 $2 \# 3 = 2^{-1} + 3 = \frac{1}{2} + 3 = \frac{7}{2}$   
 $5 \# \frac{5}{2} = \frac{1}{5} + \frac{5}{2} = \frac{2}{10} + \frac{25}{10} = \frac{27}{10}$

13.  $\frac{8 \cdot 4}{4} = \frac{8 \cdot 4}{4}$   
 $8 = 8$   
 $\cos A = \frac{8}{10} = \frac{4}{5}$   
 $A \approx 66^\circ$

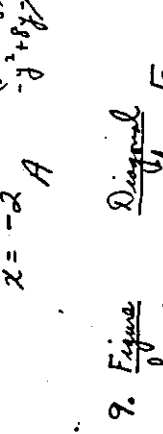
14.  $\frac{3^2 + 3^2}{4} = \frac{18}{4} = \frac{9}{2}$   
 $\frac{3^2 + 3^2}{4} = \frac{18}{4} = \frac{9}{2}$   
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15.  $15 = 7(5+3x) = 12 + 21x + 14$   
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16.  $M = \frac{2\sqrt{x} - 4\sqrt{y}}{2\sqrt{x} - 3\sqrt{y}} = -10$   
 $2\sqrt{x} - 4\sqrt{y} = -10(2\sqrt{x} - 3\sqrt{y})$   
 $2\sqrt{x} - 4\sqrt{y} = -20\sqrt{x} + 30\sqrt{y}$   
 $22\sqrt{x} = 34\sqrt{y}$   
 $\frac{11\sqrt{x}}{17\sqrt{y}} = 1$

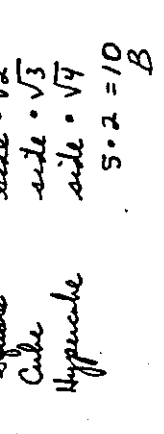
17.  $Y$  is the center of the right angle  
 $M_1 = \text{slope of } XY$   
 $M_2 = \text{slope of } YZ$   
 $M_1 \cdot M_2 = -1$   
 since  $\perp$  lines form rt. angle  
 $\frac{d-1}{4} \cdot \frac{4}{d-1} = -1$   
 $4(d-1) = -(4-d)(d-1)$   
 $4d-4 = d^2-5d+4$   
 $0 = d^2-9d+8$   
 $0 = (d-8)(d-1)$   
 $d=8$  or  $d=1$



18.  $1 + \frac{2+3}{y-2} = \frac{3y-3}{6-y}$   
 $(y-2)(6-y) + (y+3)(6-y) = (3y-3)(y-2)$   
 $-y^2 + 8y - 12 - y^2 + 3y + 18 = 3y^2 - 9y + 6$   
 $-2y^2 + 11y = 3y^2 - 9y + 6$   
 $0 = 5y^2 - 20y + 6$   
 $0 = y^2 - 4y = y(y-4)$   
 $y = 0$  or  $y = 4$

19.  $15 = 7(5+3x) = 12 + 21x + 14$   
 $15 - 35 - 21x = 12 + 21x + 14$   
 $-21x - 20 = 2x + 26$   
 $-23x = 46$   
 $x = -2$

20.  $\frac{1}{2}h(b_1 + b_2 + \sqrt{b_1 b_2}) = V$   
 $\frac{1}{2}h(9\pi + 25\pi + \sqrt{9\pi \cdot 25\pi}) = 196\pi$   
 $\frac{1}{2}h(34\pi + 15\pi) = 196\pi$   
 $\frac{1}{2}h(49\pi) = 196\pi$   
 $h = 8$



21.  $15 = 7(5+3x) = 12 + 21x + 14$   
 $15 - 35 - 21x = 12 + 21x + 14$   
 $-21x - 20 = 2x + 26$   
 $-23x = 46$   
 $x = -2$

22.  $\frac{1}{2}h(b_1 + b_2 + \sqrt{b_1 b_2}) = V$   
 $\frac{1}{2}h(9\pi + 25\pi + \sqrt{9\pi \cdot 25\pi}) = 196\pi$   
 $\frac{1}{2}h(34\pi + 15\pi) = 196\pi$   
 $\frac{1}{2}h(49\pi) = 196\pi$   
 $h = 8$

23.  $15 = 7(5+3x) = 12 + 21x + 14$   
 $15 - 35 - 21x = 12 + 21x + 14$   
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 $-23x = 46$   
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24.  $15 = 7(5+3x) = 12 + 21x + 14$   
 $15 - 35 - 21x = 12 + 21x + 14$   
 $-21x - 20 = 2x + 26$   
 $-23x = 46$   
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25.  $15 = 7(5+3x) = 12 + 21x + 14$   
 $15 - 35 - 21x = 12 + 21x + 14$   
 $-21x - 20 = 2x + 26$   
 $-23x = 46$   
 $x = -2$

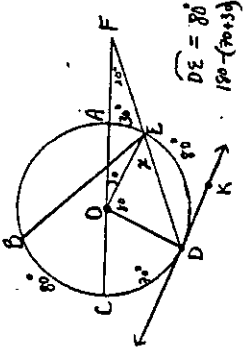
26.  $15 = 7(5+3x) = 12 + 21x + 14$   
 $15 - 35 - 21x = 12 + 21x + 14$   
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 $-23x = 46$   
 $x = -2$

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18.  $\sqrt{\frac{A+B}{C}} = \frac{A\sqrt{B}}{C}$   
 $\frac{A+B}{C} = \frac{A^2 B}{C^2}$

M/C  
 $CA+B = A^2 B$   
 $CA = A^2 B - B$   
 $C = \frac{A^2 B - B}{A}$

$C = \frac{A^2 B - B}{A} - \frac{B}{A}$   
 $C = \frac{A^2 B - B - A^2 B + A^2 B}{A}$   
 $C = \frac{A^2 B - B}{A}$

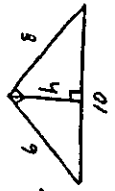


$\angle DOE = 80^\circ$ ,  $\angle AOE = 30^\circ$   
 $\angle CDE = \frac{1}{2}(70-30) = 20^\circ$   
 $\angle ODE = 180 - [(80+30) + 20]$   
 $= 180 - 130 = 50^\circ$   
 $OD = OE$  (radii)  $\angle ODE = 50^\circ$  also

20. Reason Present Abs Age -x

Female	3x	2x
Male	3x-2	2x-2
Ken	x	0

$F + M = 42$   
 $2x + 2x - 2 = 42$   
 $4x = 44$   
 $x = 11$   
 $F = 3(11) = 33$   
 $M = 31$   
 $AOD = 64$

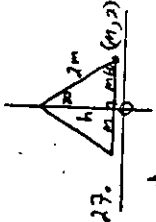


21.  $\frac{1}{h^2} = \frac{1}{6^2} + \frac{1}{8^2}$   
 $\frac{1}{h^2} = \frac{6^2 + 8^2}{6^2 \cdot 8^2}$   
 $h^2 = \frac{6^2 \cdot 8^2}{6^2 + 8^2}$   
 $h^2 = \frac{36 \cdot 64}{36 + 64}$   
 $h^2 = \frac{2304}{100}$   
 $h = \sqrt{\frac{2304}{100}}$   
 $h = \frac{48}{10} = 4.8$

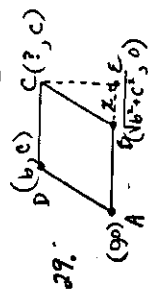
23.  $3(x^2 + 3x + 10) = 2(x^2 - x)$   
 $3x^2 + 9x + 30 = 2x^2 - 2x$   
 $x^2 + 11x + 30 = 0$

22.  $\frac{2x^2}{x+1}$   
 $\frac{2(50)(40)}{50+40}$   
 $\frac{4000}{90}$   
 $44.4$

24.  $AC = 17, AB = 6$   
 $CB = 3\sqrt{2}$   
 $AB^2 = AC^2 + CB^2$   
 $x^2 = 6^2 + (3\sqrt{2})^2$   
 $x^2 = 36 + 18 = 54$   
 $x = \sqrt{54} = 3\sqrt{6}$



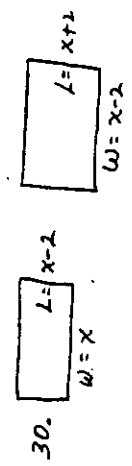
27.  $x^2 = m^2 + n^2$   
 $h = m\sqrt{3}$   
 $m\sqrt{3} + 2$   
 $m\sqrt{3} + 2$



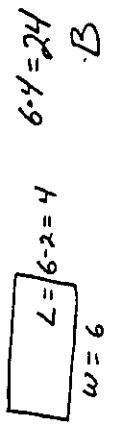
29.  $BC = AB = \sqrt{b^2 + c^2}$   
 $CE = d$   
 $BE^2 + CE^2 = CB^2$   
 $x^2 + d^2 = b^2 + c^2$   
 $x^2 + c^2 = b^2 + c^2$   
 $x^2 = b^2$   
 $x = b$   
 $AE = AB + BE$   
 $AE = \sqrt{b^2 + c^2} + b$

25.  $t + u = 12$   
 $(10u + t) = 2(10t + u) - 12$   
 $10u + t = 20t + 2u - 12$   
 $8u - 19t = -12$   
 $M_{-8} \begin{cases} 10u + t = 12 \\ 8u - 19t = -12 \end{cases}$   
 $ADD \quad -27t = -108$   
 $t = 4$   
 $14 - 8 = 6$   
 $u = 8$

28.  $(A+B)^2 = A^2 + 2AB + B^2$   
 $(2)^2 = 2AB + 6$   
 $-2 = 2AB$   
 $AB = -1$   
 $(A^2 + B^2)^2 = A^4 + 2A^2B^2 + B^4$   
 $(6)^2 = 2(A^2B^2) + A^4 + B^4$   
 $36 = 2(-1)^2 + A^4 + B^4$   
 $36 = 2 + A^4 + B^4$



30.  $A_0 = A_n - 8$   
 $x(x-2) = (x+2)(x-2) - 8$   
 $x^2 - 2x = x^2 - 4 - 8$   
 $-2x = -12$   
 $x = 6$



26.  $\frac{x}{7} = \frac{7}{3}$   
 $\frac{x}{7} = \frac{49}{21}$   
 $\frac{x+7}{7} = \frac{49}{21} + \frac{7}{3}$   
 $\frac{x+7}{7} = \frac{49}{21} + \frac{49}{21}$   
 $\frac{x+7}{7} = \frac{98}{21}$   
 $x+7 = \frac{98}{3}$   
 $\frac{x+7}{7} = \frac{98}{21} = \frac{14}{3}$

$6 \cdot 4 = 24$   
 $B$