

MPM 1D0 Solving Equations Test March 2006

B. Thinking

1. Solve (7 marks)

$$\frac{1}{3}(4x+6) = \frac{5}{6}(x-9)$$

Name _____ K = $\frac{\quad}{53}$ C = $\frac{\quad}{5}$ T = $\frac{\quad}{7}$

A. Knowledge

1. Solve in one step. (10 marks)

<p>a) $x+7=-5$ x = _____</p>	<p>b) $9+x=4$ x = _____</p>	<p>c) $21=x-5$ _____ = x</p>
<p>d) $3x=-12$ x = _____</p>	<p>e) $-5x=-65$ x = _____</p>	<p>f) $\frac{x}{3}=-15$ x = _____</p>
<p>g) $\frac{-x}{4}=21$ x = _____</p>	<p>h) $\frac{1}{5}x=12$ x = _____</p>	<p>i) $-12x=-12$ x = _____</p>
<p>j) $\frac{x}{15}=\frac{1}{5}$ x = _____</p>		

2. Solve in 2 steps, leave in reduced form and check. (13 marks)

<p>a) $3a+7=16$ _____ = _____ a = _____</p>	<p>b) $-6y-8=12$ _____ = _____ y = _____ y = _____</p>	<p>c) $9=\frac{x}{5}-11$ _____ = _____ _____ = x</p>
<p>Check L.S.= _____ R.S.= _____</p>	<p>Check L.S.= _____ R.S.= _____</p>	<p>Check L.S.= _____ R.S.= _____</p>

3. Solve: Show your steps. (K=18 Marks)

a) $3y - 5 = 5y + 7$	b) $3(x-5) = -6$
c) $\frac{2}{3}a = -\frac{4}{5}$	d) $9 - 3(1-w) = 7 - 4(2-w)$
e) $-2(4x+4) = 4(4x+6)$	

4. Solve: Show all steps. (12 marks)

a) $\frac{x-3}{5} + \frac{2x+6}{3} = \frac{-x-2}{6}$
b) $\frac{m+4}{-3} - \frac{3m-2}{6} = 5m+1$

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Name Answers

$K = \frac{\quad}{53}$

$C = \frac{\quad}{5}$

$T = \frac{\quad}{7}$

A. Knowledge

1. Solve in one step. (10 marks)

<p>a) $x + 7 = -5$ $x = \underline{-12}$ ✓</p>	<p>b) $9 + x = 4$ $x = \underline{-5}$ ✓</p>	<p>c) $21 = x - 5$ $\underline{26} = x$ ✓</p>
<p>d) $3x = -12$ $x = \underline{-4}$ ✓</p>	<p>e) $-5x = -65$ $x = \underline{13}$ ✓</p>	<p>f) $\frac{x}{3} = -15$ $x = \underline{-45}$ ✓</p>
<p>g) $\frac{-x}{4} = 21$ $x = \underline{-84}$ ✓</p>	<p>h) $\frac{1}{5}x = 12$ $x = \underline{60}$ ✓</p>	<p>i) $-12x = -12$ $x = \underline{1}$ ✓</p>
<p>j) $\frac{x}{15} = \frac{1}{5}$ $x = \underline{3}$ ✓</p>		

2. Solve in 2 steps, leave in reduced form and check. (13 marks)

<p>a) $3a + 7 = 16$ $\underline{3a} = \underline{9}$ ✓ $a = \underline{3}$ ✓</p>	<p>b) $-6y - 8 = 12$ $\underline{-6y} = \underline{20}$ ✓ $y = \underline{\frac{-20}{6}}$ ✓ $y = \underline{-\frac{10}{3}}$ ✓</p>	<p>c) $9 = \frac{x}{5} - 11$ $\underline{20} = \underline{\frac{x}{5}}$ ✓ $\underline{100} = x$ ✓</p>
<p>Check L.S. = $3a + 7$ R.S. = 16 $= 3(3) + 7$ $= 9 + 7$ ✓ $= 16$ L.S. = R.S. ✓ ∴ $a = 3$ ✓</p>	<p>Check L.S. = $-6y - 8$ R.S. = 12 $= -6(\frac{-10}{3}) - 8$ $= \frac{60}{3} - 8$ ✓ $= 20 - 8$ $= 12$ L.S. = R.S. ✓ ∴ $y = -\frac{10}{3}$ ✓</p>	<p>Check L.S. = 9 R.S. = $\frac{x}{5} - 11$ $= \frac{100}{5} - 11$ ✓ $= 20 - 11$ $= 9$ L.S. = R.S. ✓ ∴ $y = 9$ ✓</p>

3. Solve. Show your steps. (K=18 Marks)

a) $3y - 5 = 5y + 7$ $-5 = 2y + 7$ ✓ $-12 = 2y$ ✓ $-6 = y$ ✓	b) $3(x - 5) = -6$ $3x - 15 = -6$ ✓ $3x = 9$ ✓ $x = 3$ ✓
c) $\frac{2}{3}a = -\frac{4}{5}$ $a = -\frac{4}{5} \times \frac{3}{2}$ ✓ $a = -\frac{12}{10}$ ✓ $a = -\frac{6}{5}$ ✓	d) $9 - 3(1 - w) = 7 - 4(2 - w)$ $9 - 3 + 3w = 7 - 8 + 4w$ ✓ $6 + 3w = -1 + 4w$ ✓ $6 = -1 + w$ ✓ $7 = w$ ✓
e) $-2(4x + 4) = 4(4x + 6)$ $-8x - 8 = 16x + 24$ ✓ $-8 = 24x + 24$ ✓ $-32 = 24x$ ✓ $x = -\frac{32}{24}$ ✓ $x = -\frac{4}{3}$ ✓	

4. Solve. Show all steps. (12 marks)

a)

$$\frac{x-3}{5} + \frac{2x+6}{3} = \frac{-x-2}{6}$$

$$\frac{6(x-3)}{30} + \frac{10(2x+6)}{30} = \frac{5(-x-2)}{30} \quad \checkmark$$

$$6x-18 + 20x+60 = -5x-10 \quad \checkmark$$

$$26x+42 = -5x-10 \quad \checkmark$$

$$31x+42 = -10 \quad \checkmark$$

$$31x = -52 \quad \checkmark$$

$$x = \frac{-52}{31} \quad \checkmark$$

b)

$$\frac{m+4}{-3} - \frac{3m-2}{6} = 5m+1$$

$$\frac{-2(m+4)}{6} - \frac{(3m-2)}{6} = \frac{6(5m+1)}{6} \quad \checkmark$$

$$-2m-8-3m+2 = 30m+6 \quad \checkmark$$

$$-5m-6 = 30m+6 \quad \checkmark$$

$$-6 = 35m+6 \quad \checkmark$$

$$-12 = 35m \quad \checkmark$$

$$\frac{-12}{35} = m \quad \checkmark$$

B. Thinking

1. Solve (7 marks)

$$\frac{1}{3}(4x+6) = \frac{5}{6}(x-9)$$

$$\frac{(4x+6)}{3} = \frac{5(x-9)}{6} \quad \checkmark$$

$$\frac{2(4x+6)}{6} = \frac{5(x-9)}{6} \quad \checkmark$$

$$8x + 12 = 5x - 45 \quad \checkmark$$

$$8x - 5x = -45 - 12 \quad \checkmark$$

$$3x = -57 \quad \checkmark$$

$$x = \frac{-57}{3} \quad \checkmark$$

$$x = -19 \quad \checkmark$$