AChor/MFM2P **Name: _____**
Date: _____

Practice Test 5: Linear Equations

K: _____	A: _____	T: _____	C: _____

Knowledge: 58 Marks

1. Solve.

(a) $-4x = -44$ [K: 2]

(b) $43 = j + 8$ [K: 2]

(c) $-7 = h - 8$ [K: 2]

(d) $\frac{m}{2} = 25$ [K: 2]

(e) $a - \frac{2}{3} = \frac{1}{3}$ [K: 2]

(f) $65 = -5y$ [K: 2]

2. Solve and check.

(a) $3(z-5) + z = 1$ [K: 5]

Check: [K: 4]

(b) $\frac{2}{3}(s+6) = -4$ [K: 6]

Check: [K: 4]

3. Solve.

(a) $3m + 14 = -4$ [K: 3]

(b) $\frac{2}{3}w = -12$ [K: 3]

(c) $-7(1+n)=63$ [K: 3]

(d) $4(f+5)-8=2(f-3)$ [K: 6]

(e) $\frac{p+2}{4}=\frac{p-1}{5}$ [K: 6]

(f) $\frac{2q+1}{2}=3-\frac{q+1}{4}$ [K: 6]

4. Solve and check: $\frac{g}{4}-2=\frac{g}{3}$.

Check:

5. Rearrange each formula to solve for the indicated variable.

(a) $P = 2a + b$, solve for a

(b) $A = \frac{(a+b)h}{2}$, solve for b

Communication: 7 Marks

6. (a) Explain in words why you would not expand the brackets to solve for P in $A = P(1+rt)$. [C: 4]

(b) Describe in **words** the steps you take to solve $2w = \frac{1}{3}w + 5$ [C: 3]

Thinking: 6 Marks

7. (a) Write an equation with brackets whose solution is 2. [T: 3]

(b) Write an equation that requires two steps to solve and its solution is 2. [T: 3]

Application: 11 Marks

8. The cost of different hair-styling services can be modelled using the formula $C = x + 0.07x + 0.10x$, where C is the total cost, in dollars, x is the list price of the service, 0.07 is the GST rate of 7%, 0.10 is a tip rate, 10%. Jennifer paid $33.93 including tax and tip. Solve the formula and determine how much she paid together for tax and tip. [A: 5]

9. Alan takes a taxi from his house to his friend David's house. Their houses are 6 km apart. The taxi driver charges a flat fee of $10 plus $0.25/km. This can be modelled using the equation: $C = 0.25x + 10$, where x represents the distance travelled in kilometres, and C represents the cost in dollars. How much will the taxi ride cost?

10. Power, *P*, in watts is related to energy, *E*, in joules, and time, *t*, in seconds, by the formula

$$P = \frac{2E + 1000}{t}.$$

(a) Solve for *E*. [A: 3]

(b) Find the energy consumed in joules when *P* = 300W and *t* = 40 seconds. [A: 3]

11. The total cost of a meal at a banquet hall is \$20 per person, plus a \$500 charge for renting the hall. Provide let statements for the variables, and write an equation to model the situation.

Answers: **1. (a)** $x = 11$**, (b)** $j = 35$**, (c)** $h = 1$**, (d)** $m = 50$**, (e)** $a = 1$**, (f)** $y = -13$**; 2. (a)** $z = 4$**, (b)** $s = -12$**;**
3. (a) $m = -6$**, (b)** $w = -18$**, (c)** $n = -10$**, (d)** $f = -9$**, (e)** $p = -14$**, (f)** $q = \frac{9}{5}$**; 4.** $g = -24$**;**
5. (a) $a = \frac{P - b}{2}$**, (b)** $b = \frac{2A - ah}{h}$ or $b = \frac{2A}{h} - a$**; 6. (a)** P cannot be isolated if we expand the brackets first. Both terms on the right side would have P in them. To isolate P, we should divide both sides by $(1 + rt)$ first because P is multiplied by $(1 + rt)$**, (b)** Step1: multiply both sides by 3 to clear the fraction; Step 2: subtract both sides by *w* to isolate 15 on the right side; Step 3: divide both sides by 5 to isolate *w***; 7.** Students would have different answers **(**e.g., **(a)** $2(x + 1) = 6$**, (b)** $2x - 1 = 3$**); 8.** Tax and tip = \$4.93 ($x = 29$)**; 9.** \$11.50**;**
10. (a) $E = \frac{Pt - 1000}{2}$**, (b)** Energy consumed is 5500 joules**; 11.** $C = 20p + 500$, where *C* is total cost in dollars and *p* is the number of people attending the banquet