## MTH 28.5 LECTURE NOTES (Ojakian)

Topic 6: Simplest Simplifying - Combining like terms and expanding

## OUTLINE

References (1.1, 1.2, 1.3, 1.5)

1. Expressing quantities with algebra
2. Simple Simplifying
(a) Combining Like Terms
(b) Expanding using distributivity
3. Using algebra to express quantities

Express the following WITHOUT calculating.
(a) 20 more than 5
(j) Half of an unknown
(b) 20 more than $x$
(k) 3 times an unknown
(c) 20 more than an unknown number
(l) The difference between 8 and 3
(d) The sum of two unknowns.
(e) 10 less than 40
(f) 10 less than $y$
(m) The difference between $x$ and 3
(n) The product of 5 and $\frac{3}{17}$
(g) Double 51.
(o) The product of 5 and an unknown.
(h) Double an unknown
(p) The quotient of 10 and 2
(i) Half of 10
(q) The quotient of an unknown and 2

## 2. Two Tricks

Do for now and later return to why they work!
(a) First "magic" trick.
i. Pick any number (call this your "original" number).
ii. Double your number.
iii. Add 5 to your last result.
iv. Double your last result.
v. Find 4 times your original number and subtract that from your last result.
vi. Now I'll guess your number...
vii. Question: How does this work?
(b) Another "magic" trick.
i. Pick any positive whole number (call this your "original" number).
ii. Add one to your number.
iii. Square your last result.
iv. Subtract one from your last result.
v. Divide your last result by your original number.
vi. Tell me your result, and I'll guess your original number.
vii. Question: How does this work?
3. Distributing
(a) $5(2 y+3)=$
(e) $5(-2 y-3)=$
(b) $5(2 y-3)=$
(f) $\frac{2}{3}(3 x+1)=$
(c) $-5(2 y+3)=$
(g) $(3-6 x) \frac{1}{3}=$

NOTE: Pick some numbers to evaluate the BEFORE and the AFTER.
4. Combining Like Terms
(a) $5 x+3+4 x+2=$
(c) $10+3 \mathrm{~A}-15-7 \mathrm{~A}=$
(b) $7 y-9+y+7-27=$
(d) $\frac{1}{3}+\frac{3}{4} x+\frac{4}{3}-\frac{1}{4} x=$

NOTE: Pick some numbers to evaluate the BEFORE and the AFTER.

## 5. Distributing AND Combining

(a) $5+4(2 x+3)=$
(c) $5 x+4(2 x+3)=$
(b) $5-4(2 x+3)=$
(d) $5(1-x)+3(2 x-2)=$

