3) c, f, g are algebraic expressions
a, d, h are numerical expressions, so they are also algebraic expressions
(recall: any numerical expression is an algebraic expression)

Notes: (b) $3 + \div 7$ is not a numerical expression (doesn't represent a single number)
(e) $3x + 2 = 7$ is an equation
(i) $y \div 0$ is not an algebraic expression (doesn't represent a number for any choice of numerical value for y)

5) $3(x+2) = 3x + 6$

$3x + 6 - x = 2x + 6$

$2x + 6 + 8 = 2x + 14$

$3(x+2) \overset{\text{wrong}}{\neq} 3x + 6 - x \overset{\text{wrong}}{\neq} 2x + 6 + 8 \overset{\text{correct.}}{=} 2x + 14$

He should have written:

$3(x+2) - x + 8$
$= 3x + 6 - x + 8$
$= 2x + 6 + 8$
$= 2x + 14$

6) a) m feet = $\boxed{12m}$ inches

b) Perimeter = $\boxed{45}$ cm

s
s □ s
s

c) x nickels and y dimes
= $\boxed{5x + 10y}$ cents

d) 6z ounces = $\boxed{\frac{6z}{16}}$ pounds
(using 16 ounces = 1 pound)

e) three consecutive whole numbers
the smallest of which is n

$\boxed{n,\ n+1,\ n+2}$

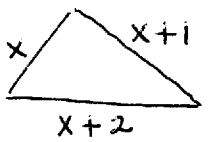
f) avg speed of the train = $\boxed{\frac{w}{5}}$ miles per hr

g) BILL: B years old
ANN: $(B - 18)$ years old
CARMEN: $\frac{1}{5}(B - 18)$ years old
DANA: $\boxed{\frac{1}{5}(B - 18) + 4}$ years old

simplify ↓

$= \frac{1}{5}B - \frac{18}{5} + \frac{20}{5}$

$= \boxed{\frac{1}{5}B + \frac{2}{5}}$ years old

7) 

Perimeter = 27 ins

$x + (x+1) + (x+2) = 27$

$3x + 3 = 27$

$3x = 24$

$x = 8$

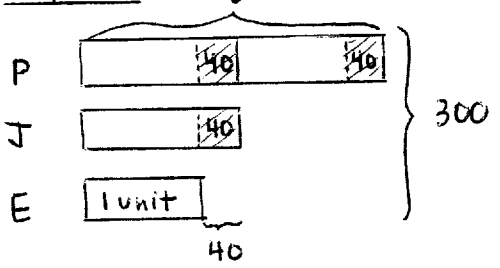
Let x = length in inches of the shortest side.

The shortest side is 8 inches

(The three sides are 8 ins, 9 ins, 10 ins)

8) a) (5A, p 25) Problem 6 (This was the problem we worked out in class 2 ways)

Method 1



4 units + 120 = 300

4 units = 300 − 120 = 180

1 unit = 180 ÷ 4 = 45

P has 45 + 40 + 45 + 40 = 170 stickers

(2 × 45) + 80

Using algebra

Let x = ~~J's amount~~ The number of stickers E has

Then x + 40 = ~~J's amount~~ the no. of stickers J has

and 2(x + 40) = ~~P's amount~~ the no. of stickers P has.

$x + (x+40) + 2(x+40) = 300$

$x + x + 40 + 2x + 80 = 300$

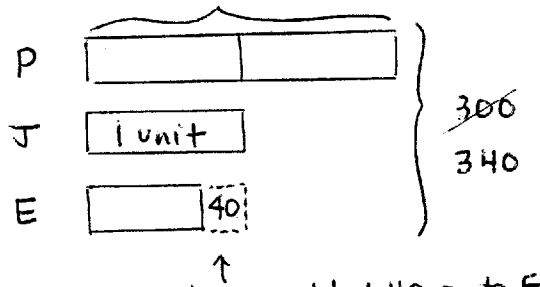
$4x + 120 = 300$

$4x = 180$

$x = 45$

So P has 2(45 + 40) = 2(85) = 170 stickers

Method 2



↑ if we added 40 on to E so they'd all have equal bars, then there would be 300 + 40 or 340 stickers

(if E had 40 more, there'd be 340 total)

300 + 40 = 340

4 units = 340

1 unit = 340 ÷ 4 = 85

P has 2 × 85 = 170 stickers

Using algebra

Let t = J's amount

Then 2t = P's amt

and t − 40 = E's amt

$t + 2t + (t-40) = 300$

$4t - 40 = 300$

$4t = 340$

$t = 85$

So P has 2(85) = 170 stickers

b) (SA, p25) Problem 8 Let b = cost of book (in dollars)

Then $2b$ = cost of magazine

and $3b$ = cost of three books

he spent \$30 − \$5 = \$25

$2b + 3b = 25$

$5b = 25$

$b = 5$

So each book costs \$5

and the magazine costs 2(\$5) or \$10

(SA, p25) Problem 10 Let x = amt PAUL spent in dollars

Then $3x$ = amt HENRY spent in dollars

Since John and Paul spent \$45 altogether,

Then $45 - x$ = amt JOHN spent in dollars

Since John and Henry spent \$65 altogether,

Then $65 - 3x$ = amt JOHN spent in dollars.

We have two expressions representing John's amount, so set them equal to each other

$45 - x = 65 - 3x$

Add $3x$ to both sides

$45 + 2x = 65$

$2x = 20$

$x = 10$

PAUL spent \$10

HENRY spent 3(\$10) or \$30

* JOHN spent

45 − 10 or \$35

(or 65 − 3(10) or \$35)

Alternatively, let J = amt JOHN spent in dollars.

We know $J + x = 45$

$J + 3x = 65$

So $\boxed{J + x} + x + x = 65$

But $J + x = 45$

So $45 + x + x = 65$

$2x = 20$

$x = 10$

PAUL spent \$10

HENRY spent 3(\$10) or \$30

JOHN?

$J + 10 = 45$

So JOHN spent \$35

9) a) (6A, p7 − 11)

Prob 1 13; $x + 8$ (years old), B

Prob 2 \$8; $m - 2$ (dollars), B

Prob 3 $w - 5$ (kg), B ; 3 kg, E

Prob 4 $4n$ (apples), B ; 32, E ; 44, E

Prob 5 $3p$ (chicken wings), B ; 21, E

Prob 6 $8k$ (square cms), B

Prob 7 12; $\frac{x}{8}$ (marbles per box), B

Prob 8 \$4; $\frac{m}{3}$ (dollars), B

Prob 9 ALL E

10, 16, 9, 0, 24, 60, 3, 1, $\frac{1}{2}$

Prob 10 $5x + 3$ (marbles), B ; 53, E

Prob 11 7, E

Prob 12 $\frac{50 - y}{2}$ (dollars), B ; \$19, E

Prob 13 4, E

Prob 14 7, E ; 10, E

10) (c) (6A, P14)

6(a) $\$(y+1)$ (b) $\$(8+1) = \$9$

7(a) $3x$ m (b) $3 \cdot 9$ m $= 27$m

8(a) $(3x+4)$ years old (b) $3 \cdot 4 + 4$
$= 12 + 4 =$ 16 years old

9(a) $\frac{50-y}{2}$ (b) $\frac{50-38}{2} = \frac{12}{2} =$ 6 cartons

11)

(a) Each packet of baking powder can be used to bake 12 cookies.
How many cookies can be baked from c packets?

(b) Jane bought r blouses at \$13 each and 8 T-shirts at \$3 each at a sale. How much did she spend in total?

(c) Jack saved \$2 a day for w days. If he originally had \$13 in his piggy bank, how much money does he have now?

(d) The distance between 2 cities is 340 miles. John drove x miles in the morning. How long more will it take him to reach his destination if his average speed is 50 miles per hour?