



Math Olympiad and Problem Solving Programs  
E120 - Honors Algebra Problem Solving  
Problem Set 11.1 - Algebra Expressions

Name:

Date:

- Right now there are  $300 + 1500 + 100 = 1900$  spaces, so if it is enlarged proportionally to 2090, the proportion is  $\frac{2090}{1900} = \frac{11}{10}$ . So the daily spaces portion will be enlarged to  $1500 \times \frac{11}{10} = 1650$  spaces, so they will add  $1650 - 1500 = \boxed{150}$  spaces.
- The average of the 4 quarters is  $\frac{83+87+93+89}{4} = 88$ . So we set up the equation:  $.90 = \frac{1}{3}x + \frac{2}{3}.88$ , where  $x$  is her final exam grade. Solve for  $x$ :  $.9 - \frac{2}{3}.88 = \frac{1}{3}x = \frac{47}{150}$ . Multiply both sides by 3, and you get  $x = .94$ .  $\boxed{94}$
- $\boxed{19}$
- $\boxed{128}$
- $\boxed{1}$
- $\boxed{1}$
- $\boxed{2c}$
- $\boxed{1}$
- If Peter has  $h$  dollars and John has  $k$  dollars and Joseph has 3 times of what Peter and John have, then Joseph has  $3(h + k)$ . The price of the toy is (all their money) - (change), so  $h + k + 3(h + k) - 2 = \boxed{4h+4k-2}$ .
- $\frac{2p + 3q}{q} = \frac{2p}{q} + \frac{3q}{q} = 2\frac{p}{q} + 3 = \frac{3}{8}$ . Subtract 3 from both sides and then divide by 2:  
 $2\frac{p}{q} = \frac{3}{8} - 3 = -\frac{21}{8}$ .  $\frac{p}{q} = -\frac{21}{8} \times \frac{1}{2} = \boxed{-\frac{21}{16}}$ .