

Name Key

8A; Algebra

* Home: 2, 6, 7, 9

#25

Date _____

8R Period _____

Coin Word Problems**Key Formula:**

Number of coins • value of each coin (\$) = Total value of the coins (\$)

**Use LESC to solve following coin (& stamp) word problems

1) Kim has 3 times as many dimes as nickels. In all she has \$1.40. How many coins of each type does she have?

<p>L</p> <p>e+ X = the # of Nickels Kim has 3X = the # of Dimes Kim has - - - - - the total value of Nickels (X) = value of Nickels - - - - - the total value of Dimes D(3X) = value of Dimes</p>	<p>E</p> <p>\$ \$ E \$</p> $.05(x) + .10(3x) = 1.40$ $.05x + .3x = 1.40$ $\underline{.35x = 1.40}$ $.35 \quad .35$ $x = 4$ $3x = 12$	<p>S</p> <p>Kim has 4 Nickels + 12 Dimes</p>	<p>C</p> $3 \cdot 4 = 12 \checkmark$ $.05(4) = .20$ $.10(12) = 1.20$ $\underline{1.40 \checkmark}$
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2) A boy had \$3.20 in his bank made up of nickels, dimes and quarters. There are 3 times as many quarters as nickels, and 5 more dimes than nickels. How many coins of each kind are there?

<p>L</p> <p>e+ X = the # of nickels the boy has 3X = the # of quarters the boy has +5 = the # of dimes the boy has - - - - - the total value of the nickels 05(X) = value of the nickels - - - - - the total value of the Q's 25(3X) = the total value of the Q's - - - - - the total value of the D's 10(X+5) = the total value of the D's</p>	<p>E</p> $.05(x) + .25(3x) + .10(x+5) = 3.20$ $.05x + .75x + .10x + .5 = 3.20$ $.9x + .5 = 3.20$ $\underline{.5 \quad -.5}$ $.9x = 2.70$ $\underline{.9 \quad .9}$ $x = 3$ $3x = 9$ $x + 5 = 8$	<p>S</p> <p>There are 3 Nickels, 9 Quarters + 8 dimes</p>	<p>C</p> $.05(3) = .15$ $.25(9) = 2.25$ $.10(8) = .80$ $\underline{3.20 \checkmark}$ $3 \cdot 3 = 9$ $3 + 5 = 8$
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3) A purse contains \$1.35 in nickels and dimes. In all, there are 15 coins. How many of each kind are there?

L
 Let
 $x =$ the # of dimes
 $15 - x =$ the # of nickels

 $.10(x) =$ the total value of dimes
 $.05(15 - x) =$ the total value of the nickels

E
 $.10(x) + .05(15 - x) = 1.35$
 $.10x + .75 - .05x = 1.35$
 $.05x + .75 = 1.35$
 $-.75 \quad -.75$

 $.05x = .60$
 $\frac{.05x}{.05} = \frac{.60}{.05}$
 $x = 12$
 $15 - x = 3$

S
 there are
 12 dimes
 3 nickels

C
 $3 + 12 = 15$
 $.10(12) = 1.20$
 $.05(3) = .15$

 1.35
 ✓

4) Mr. Jones bought \$30.64 worth of stamps. He bought 20 more 19 cent stamps than 50 cent stamps. He bought twice as many 29 cent stamps as 19 cent stamps. How many of each kind of stamp did he buy?

L
 let
 $x =$ the # of 50¢ stamps
 $x + 20 =$ the # of 19¢ stamps
 $2(x + 20) =$ the # of 29¢ stamps

 $.50(x) =$ the total value of 50¢ stamps
 $.19(x + 20) =$ the total value of 19¢ stamps
 $.29[2(x + 20)] =$ the total value of 29¢ stamps

E
 $.50(x) + .19(x + 20) + .29[2(x + 20)] = 30.64$
 $.50(x) + .19(x + 20) + .29(2x + 40) = 30.64$
 $.50x + .19x + 3.8 + .58x + 11.6 = 30.64$
 $1.27x + 15.4 = 30.64$
 $-.15.4 \quad -.15.4$

 $1.27x = 15.24$
 $\frac{1.27x}{1.27} = \frac{15.24}{1.27}$
 $x = 12$
 $x + 20 = 32$
 $2(x + 20) = 64$

S
 Mr. Jones
 bought 12, 50¢
 stamps, 32, 19¢
 stamps & 64, 29¢
 stamps

C
 $.50(12) = 6.00$
 $.19(32) = 6.08$
 $.29(64) = 18.56$

 30.64

 $12 + 20 = 32$ ✓
 $32(2) = 64$ ✓

5) Fara cashed a \$185 check in the bank. She received \$1 bills, \$5 bills, and \$10 bills. In this order, the numbers of three types of bills she received were three consecutive integers. How many bills of each type did she receive?

L	E	S	C
<p>let</p> <p>$x = \#$ of \$1 bills</p> <p>$x+1 = \#$ of \$5 bills</p> <p>$x+2 = \#$ of \$10 bills</p> <hr/> <p>$1(x) =$ the total value of \$1 bills</p> <p>$5(x+1) =$ the total value of \$5 bills</p> <p>$10(x+2) =$ the total value of \$10 bills</p>	$1(x) + 5(x+1) + 10(x+2) = 185$ $1x + 5x + 5 + 10x + 20 = 185$ $16x + 25 = 185$ $\begin{array}{r} 16x + 25 = 185 \\ -25 \quad -25 \\ \hline 16x = 160 \\ \frac{16x}{16} = \frac{160}{16} \\ x = 10 \\ x+1 = 11 \\ x+2 = 12 \end{array}$	<p>Fara received</p> <p>10, \$1 bills</p> <p>11, \$5 bills ✓</p> <p>12, \$10 bills</p>	$1(10) = 10$ $5(11) = 55$ $10(12) = 120$ <hr/> $185 \checkmark$

6) Erin deposited \$170 in the bank. The number of \$5 bills was 3 times the number of \$10 bills, and the number of \$1 bills was 30 more than the number of \$5 bills. How many bills of each type did she deposit?

L	E	S	C
<p>let</p> <p>$x = \#$ of \$10 bills</p> <p>$3x = \#$ of \$5 bills</p> <p>$x+30 = \#$ of \$1 bills</p> <hr/> <p>$10(x) =$ the total value of \$10 bills</p> <p>$5(3x) =$ the total value of \$5 bills</p> <p>$1(x+30) =$ the total value of \$1 bills</p>	$10(x) + 5(3x) + 1(3x+30) = 170$ $10x + 15x + 3x + 30 = 170$ $28x + 30 = 170$ $\begin{array}{r} 28x + 30 = 170 \\ -30 \quad -30 \\ \hline 28x = 140 \\ \frac{28x}{28} = \frac{140}{28} \\ x = 5 \\ 3x = 15 \\ 3x + 30 = 45 \end{array}$	<p>Erin deposited</p> <p>5, \$10 bills</p> <p>15, \$5 bills +</p> <p>45, \$1 bills</p>	$10(5) = 50$ $5(15) = 75$ $1(45) = 45$ <hr/> $170 \checkmark$ <hr/> $5(3) = 15 \checkmark$ $15 + 30 = 45 \checkmark$

7) Elyssa has twice as many dimes as pennies and 3 times as many nickels as pennies. In all she has \$1.80. How many coins of each type does she have?

L	E	S	C
<p>Let</p> <p>x = the # of pennies</p> <p>$2x$ = the # of D's</p> <p>$3x$ = the # of N's</p> <p>the total value of P's $.01(x)$</p> <p>the total value of D's $10(2x)$</p> <p>the total value of N's $.05(3x)$</p>	$.01(x) + .10(2x) + .05(3x) = 1.80$ $.01x + .20x + .15x = 1.80$ $\begin{array}{r} .36x = 1.80 \\ \underline{.36} \quad \underline{.36} \\ x = 5 \end{array}$ <p>$2x = 10$</p> <p>$3x = 15$</p>	<p>Elyssa has 5 pennies, 10 dimes + 15 nickels</p>	$\begin{array}{r} 2(5) = 10 \checkmark \\ 3(5) = 15 \checkmark \\ \hline .01(5) = .05 \\ .10(10) = 1.00 \\ .05(15) = .75 \\ \hline 1.80 \end{array}$

8) Nick has 4 times as many quarters as dimes. In all he has \$2.20. How many coins of each type does he have?

L	E	S	C
<p>Let</p> <p>x = the # of D's</p> <p>$4x$ = the # of Q's</p> <p>the total value of dimes $.10(x)$</p> <p>the total value of Quarters $.25(4x)$</p>	$.10(x) + .25(4x) = 2.20$ $.10x + 1x = 2.20$ $\begin{array}{r} 1.1x = 2.20 \\ \underline{1.1} \quad \underline{1.1} \\ x = 2 \end{array}$ <p>$4x = 8$</p>	<p>Nick has 2 dimes + 8 Quarters</p>	$\begin{array}{r} 2(2) = 4 \checkmark \\ \hline .10(2) = .20 \\ .25(8) = 2.00 \\ \hline 2.20 \end{array}$