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R.S.

Simplify

$(9xy)^0 = 1$

$8 = 2^3$

$4 = 2^2$

$2 = 2^1$

$1 = 2^0$

$\frac{1}{2} = 2^{-1}$

$x^{-n} = \frac{1}{x^n}$

(14) 15 coins nickels and dimes

RS $1.00

(1) let n = the # of nickels
d = the # of dimes

	#	value	total worth
nickels	n	.05	$.05n$
dimes	d	.10	$.10d$
total	15		1.00

(2)
$$n + d = 15$$
$$-n \qquad -n$$
$$d = 15 - n$$

$$100[.05n + .10d = 1.00]$$
$$5n + 10d = 100$$
$$5n + 10(15 - n) = 100$$
$$5n + 150 - 10n = 100$$
$$-5n + 150 = 100$$
$$-150 \qquad -150$$
$$\frac{-5n}{-5} = \frac{-50}{-5}$$
$$n = 10$$

(3) $d = 15 - n = 5$

(4) There are 10 nickels and 5 dimes.

16 Solve: $2x + 10 \le 7x + 14$

RS.

$$\begin{array}{r} 2x + 10 \le 7x + 14 \\ -7x \qquad\qquad -7x \\ \hline -5x + 10 \le 14 \\ -10 \quad -10 \\ \hline -5x \le 4 \end{array}$$

$$\frac{-5x}{-5} \le \frac{4}{-5}$$

$$x \ge -\frac{4}{5}$$

If I had

$$\frac{5x}{5} \ge \frac{-4}{5}$$

$$x \ge -\frac{4}{5}$$

(22)

$$\frac{(\cancel{10}^{2}\, x^3 y^5)(\cancel{21}^{3}\, x^2 y^6)}{(\cancel{7}_{1}\, x y^3)(\cancel{5}_{1}\, x^9\, y)}$$

$$\frac{(10)(21)}{(7)(5)}$$

$$\frac{6x^5y^{11}}{x^{10}\; y^4}$$

$$(10x^3y^5)(21x^2y^6)$$

$$\frac{10(21)\,x^3x^2y^5y^6}{(7)(5)\,x\cdot x^9\cdot y^3 y}$$

$$\frac{6y^{11-4}}{x^{-5}x^{10}}$$

$$\frac{6y^7}{x^{5}}$$

$21x^2y^3 + 7xy^2$

$7xy^2(3xy+1)$

GCF $= 7xy^2$

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$\frac{\cancel{3}x^2}{\cancel{3}} = x^2$

93

$\frac{\cancel{15}x^2\cancel{y}}{\cancel{3}x\cancel{y}}$

$5x^{2-1}$

$5x$

95

$\frac{\cancel{35}a^6b^8}{\cancel{70}a^2b^{10}}$

$\frac{a^{6-2}}{2b^{10-8}}$

$\frac{a^4}{2b^2}$

alt

$\frac{a^6a^{-2}b^8b^{10}}{2}$

$\frac{a^4b^{-2}}{2}$

$\frac{a^4}{2b^2}$

$$\frac{15x^2y - 21xy^2}{-3xy}$$

$$\frac{15x^{\cancel{2}}\cancel{y}}{-3\cancel{x}\cancel{y}} - \frac{21\cancel{x}y^{\cancel{2}}}{-3\cancel{x}\cancel{y}}$$

$$-5x + 7y$$

Long Division

Divide $3x^2 + 6x - 5$ by $x + 3$

$$
\begin{array}{r l}
 & 3x - 3 + \dfrac{4}{x+3} \\
x + 3 \,\big) & \overline{3x^2 + 6x - 5} \\
 & \underline{3x^2 + 9x} \\
 & \qquad -3x - 5 \\
 & \qquad \underline{\overset{+}{-}3x \overset{+}{-} 9} \\
 & \qquad \qquad 4
\end{array}
$$

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$$\frac{6a^3 - 13a^2 - 4a + 15}{3a - 5}$$

$$2a^2 - a - 3$$

$$3a - 5 \overline{\big) \, 6a^3 - 13a^2 - 4a + 15}$$

$$- \underline{6a^3 \overset{+}{-} 10a^2}$$

$$-3a^2 - 4a$$

$$\underline{-3a^2 + 5a}$$

$$-9a + 15$$

$$\underline{-9a + 15}$$

$$0$$

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RS

a) $\dfrac{y^2(1) - \left(\dfrac{16}{\cancel{y^2}}\right)\cancel{y^2}}{y^2(1) - \left(\dfrac{4}{\cancel{y}}\right)\cancel{y^2}^{\,y} - \left(\dfrac{32}{\cancel{y^2}}\right)\cancel{y^2}^{\,1}}$

LCd = y^2

$$\frac{y^2 - 16}{y^2 - 4y - 32}$$

-32 p

-4 s

-8 (4)

$$\frac{\cancel{(y+4)}(y-4)}{(y-8)\cancel{(y+4)}}$$

$$\frac{y-4}{y-8}$$

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RS.

$$\frac{\cancel{(a-2)}\frac{1}{\cancel{a-2}} + 4(a-2)}{\cancel{(a-2)}\frac{1}{\cancel{a-2}} + 1(a-2)}$$

$$\frac{1 + 4a - 8}{1 + a - 2}$$

$$\frac{4a-7}{a-1}$$

LCd = $a-2$

sour patch kids
star burst
war heads
kit kats
gummy bears

$\sqrt{4x^2} = \pm\sqrt{9}$ Solve

$\frac{2x}{2} = \frac{\pm 3}{2}$

$x = \pm\frac{3}{2}$

$\frac{4x^2}{4} = \frac{9}{4}$

$\sqrt{x^2} = \pm\sqrt{\frac{9}{4}}$

$x = \pm\frac{3}{2}$

$\frac{2}{\sqrt{5}}\frac{\sqrt{5}}{\sqrt{5}}$

$\frac{2\sqrt{5}}{5}$

$\frac{2}{\sqrt[3]{4}}\frac{\sqrt[3]{2}}{\sqrt[3]{2}}$

$\frac{2\sqrt[3]{2}}{\sqrt[3]{8}}$

$\frac{\cancel{2}^{1}\sqrt[3]{2}}{\cancel{2}_{1}}$

$\sqrt[3]{2}$

$4 = 2^2$

$\sqrt[3]{2^2}\,\sqrt[3]{2}$

$\sqrt[3]{2^3}$

$$\left(\frac{3}{\sqrt{5}-1}\right)\left(\frac{\sqrt{5}+1}{\sqrt{5}+1}\right) = \frac{3\sqrt{5}+3}{5-1}$$

$$= \frac{3\sqrt{5}+3}{4}$$

multiply by
the conjugate of the denominator
conjugate of the denominator

$$\left(\frac{2}{\sqrt{5}+\sqrt{2}}\right)\left(\frac{\sqrt{5}-\sqrt{2}}{\sqrt{5}-\sqrt{2}}\right) = \frac{2\sqrt{5}-2\sqrt{2}}{5-2}$$

4

$$= \frac{2\sqrt{5}-2\sqrt{2}}{3}$$

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RS

a) $(\cancel{9})\frac{x}{\cancel{9}} = \frac{4}{\cancel{3}}(\cancel{9})^{3}$ LCD = 9

$x = 12$

b) $\cancel{3}(x-3)\frac{x}{\cancel{3}} = \frac{6}{\cancel{x-3}}(3)(\cancel{x-3})$ LCD = $3(x-3)$

$x \neq 3$

$(x-3)x = 18$

$x^2 - 3x = 18$

$\quad -18 \quad -18$

$x^2 - 3x - 18 = 0$

$(x-6)(x+3) = 0$

$x = 6$ or $x = -3$

OK