Review Exercises (Ch. 1)

1) $P = 20$ cm
$A = 21$ cm^2

3) $P = 28$ cm
$A = 21$ cm^2

5) $2 \quad 16 \quad 5$
$= 16 \quad 2 \quad 5$ ç Commutative Property of
$= 16 \quad (2 \quad 5)$
$= 16 \quad 10$
$= 160$

7) $C = 2 \quad \pi \quad \text{RADIUS}$
$C \approx 2 \quad (3.14) \quad (7 \text{ ft})$
$C \approx 43.96 \text{ ft}$

9)

a) Ed's work rate is $\dfrac{400 \text{ ft}^2}{50 \text{ min}} = \dfrac{400}{50} \dfrac{\text{ft}^2}{\text{min}} = 8 \dfrac{\text{ft}^2}{\text{min}}$

b) Ed's work rate is $\dfrac{1 \text{ job}}{3 \text{ hrs}} = \dfrac{1}{3} \dfrac{\text{job}}{\text{hr}}$

c) Debbie's work rate is $\dfrac{1 \text{ job}}{4 \text{ hrs}} = \dfrac{1}{4} \dfrac{\text{job}}{\text{hr}} = 0.25 \dfrac{\text{job}}{\text{hr}}$

d) Ed and Debbie's combined work rate
= Ed's work rate + Debbie's work rate

$= \dfrac{1}{3} \dfrac{\text{job}}{\text{hr}} + \dfrac{1}{4} \dfrac{\text{job}}{\text{hr}}$

$= \dfrac{1 \quad 4}{3 \quad 4} \dfrac{\text{job}}{\text{hr}} + \dfrac{1 \quad 3}{4 \quad 3} \dfrac{\text{job}}{\text{hr}}$ ç Need a common denominator

$= \dfrac{4}{12} \dfrac{\text{job}}{\text{hr}} + \dfrac{3}{12} \dfrac{\text{job}}{\text{hr}}$

$= \dfrac{7}{12} \dfrac{\text{job}}{\text{hr}}$

11) a) $\dfrac{9}{5} = 1.8 = 180\%$

b) $\dfrac{17}{30} \approx 0.567 = 56.7\%$

c) $\dfrac{2}{35} \approx 0.057 = 5.7\%$

13)

a) (+)(+)(+)

(+)(+)(+)(+)
$^{+}3 + {}^{+}4 = {}^{+}7$

b) (+)(+)
(−)(−)(−)(−)(−)
$^{+}2 + {}^{-}5 = {}^{-}3$

c) (−)
(+)(+)(+)
$^{-}1 + {}^{+}3 = {}^{+}2$

d) (−)(−)(−)(−)
(−)(−)
$^{-}4 + {}^{-}2 = {}^{-}6$

15)

a) $^{+}71.2 + {}^{-}20.5$
These numbers have opposite signs, so we subtract their absolute values and then take the sign with the larger absolute value (Here it is $^{+}$):
$^{+}71.2 + {}^{-}20.5 = {}^{+}50.7$

b) $^{-}15.1 + {}^{-}56.76$
These numbers have the same sign, so we add their absolute values and keep the sign:
$^{-}15.1 + {}^{-}56.76 = {}^{-}71.86$

17) To find the difference, subtract:
$^{-}34 \text{ ft} - 86 \text{ ft} = {}^{-}34 \text{ ft} + {}^{-}86 \text{ ft} = {}^{-}120 \text{ ft}$
The balloonist elevation changed by $^{-}120$ ft. (The − sign indicates that the balloonist's elevation *decreased* over this time period).

19)

a) $^{+}3 \quad {}^{+}2 = {}^{+}6$
b) $^{+}3 \quad {}^{-}2 = {}^{-}6$
c) $^{-}3 \quad {}^{+}2 = {}^{-}6$
d) $^{-}3 \quad {}^{-}2 = {}^{+}6$

21)

a) $4^3 = 4 \quad 4 \quad 4 = 64$
b) $3^4 = 3 \quad 3 \quad 3 \quad 3 = 81$
c) $8^1 = 8$
d) $\left(\frac{1}{2}\right)^5 = \frac{1}{2} \quad \frac{1}{2} \quad \frac{1}{2} \quad \frac{1}{2} \quad \frac{1}{2} = \frac{1}{2 \quad 2 \quad 2 \quad 2 \quad 2} = \frac{1}{32}$
e) $1^{36} = 1$

23)

a) $2^{-4} = \frac{1}{2^4} = \frac{1}{2 \quad 2 \quad 2 \quad 2} = \frac{1}{16}$

b) $15^{-1} = \frac{1}{15^1} = \frac{1}{15}$

c) $58^0 = 1$

25)

a) $561{,}000 \quad 24{,}800 = 1.39128 \times 10^{10} = 13{,}912{,}800{,}000$

b) $2.5 \div 5000 = 5 \times 10^{-4} = 0.0005$

27)

a) Since 8 is close to 9 and just a little bit less than 9, we can estimate $\sqrt{8}$ to be slightly less than $\sqrt{9} = 3$:
$\sqrt{8} \approx 2.8$

b) Since 37 is one more than $36 = 6^2$, we can estimate $\sqrt{37}$ to be slightly greater than 6:
$\sqrt{37} \approx 6.1$

c) Since 72 is about halfway between $64 = 8^2$ and $81 = 9^2$, we can estimate $72 \approx (8.5)^2$, from which we can conclude
$\sqrt{72} \approx 8.5$