1) (6A, Practice 4B, p. 54)

(a) 9% of 125 = \(0.09 \times 125 = 11.25\)

(b) 78% of 900 = \(0.78 \times 900 = 702\)

(c) 30% of $250 = \(0.30 \times 250 = \$75\)

(d) 45% of 400 m = \(0.45 \times 400 = 180\) m

(e) 21% of 50 l = \(0.21 \times 50 = 10.5\) l

(f) 16% of 60 kg = \(0.16 \times 60 = 9.6\) kg
(#2) \(4\% \text{ of } \$1500 = (0.04)(1500) = \$60\)

(#3) \(40\% \text{ of } 15 = (0.4)(15) = 6 \text{ arrows hit the target} \rightarrow 9 \text{ arrows did not hit} \)

\[ \text{alt} \text{ 40\% of arrows hit } \rightarrow 60\% \text{ of arrows did not hit; 60\% of } 15 \]
\[ = (0.6)(15) = 9 \text{ did not hit} \]

(#4) \(64\% \text{ are air-conditioned } \rightarrow 36\% \text{ are not air-conditioned} \)
\[36\% \text{ of } 125 = (0.36)(125) = 45 \text{ are not air-conditioned} \]

(#5) \(5\% \text{ of } \$200 = (0.05)(200) = \$10 \text{ discount} ; \text{ so selling price } = \]
\[\$200 - \$10 = \$190 \]

\[\text{alt/ 5\% discount } \rightarrow \text{ selling price is 95\% of } \$200 ; \ (0.95)(200) = \$190 \]

(#6) \(5\% \text{ of } \$1400 = (0.05)(1400) = \$70 \)
\[\text{So his monthly salary after the increase } = \$1470 \]

\[\text{alt/ his monthly salary after the increase } = 105\% \text{ of } \$1400 \]
\[= (1.05)(1400) = \$1470 \]

(#7) \(\text{OK to add percentages here since of the same quantity} \)
\[60\% + 24\% = 84\% \rightarrow 100\% - 84\% = 16\% \text{ of the stamps are European} \]
\[16\% \text{ of } 300 = (0.16)(300) = 48 \text{ European stamps} \]

(#8) \(\text{After making the meatballs, she has } 1600 \text{ g } - 350 \text{ g } = 1250 \text{ g left} \).
\(\text{She used } 80\% \text{ of the remainder for hamburgers} , \text{ so she'll have} \]
\[20\% \text{ of } 1250 \text{ g left } ; \ (0.2)(1250) = 250 \text{ g left} \]

(#9) \(\text{She spent } 15\% \text{ of } \$80 \text{ or } (0.15)(80) = \$12 \text{ on vegetables} \)
\(\text{She has } \$80 - \$12 = \$68 \text{ remaining. She spent } 50\% \text{ of } \$68 \)
\[\text{or } \frac{1}{2}(68) = \$34 \text{ on meat} \]

(#10) \(60\% \text{ of class are GIRLS, so } 40\% \text{ are BOYS} \)
\[(0.6)(40) = 24 \text{ GIRLS}, \text{ so } 40 - 24 = 16 \text{ BOYS (or } (0.4)(40) = 16 \text{)} \]
\[50\% \text{ of the girls wear glasses} ; \text{ so } \frac{1}{2}(24) = 12 \text{ girls wear glasses} \]
\[25\% \text{ of the boys wear glasses} ; \text{ so } \frac{1}{4}(16) = 4 \text{ boys wear glasses} \]
\[\text{So } 12 + 4 = 16 \text{ students wear glasses} (\text{alt 50\% of 60\% } = \frac{1}{2}(60\%) = 30\% \)
\[\text{25\% of 40\% } = \frac{1}{4}(40\%) = 10\%. \]
\[\text{So } 40\% \text{ of class wears glasses} \]
\[(0.4)(40) = 16 \text{ students wear glasses} \]
2) Let $x = \text{original price}$. $\$26$ is $65\%$ of $x$. So 

$$0.65x = 26$$

$$x = \frac{26}{0.65} = \$40$$

The original price of the shirt was $\$40$.

3) (6A, Practice 4D, p67)

#7) WHOLE UNIT = \text{usual price of the bicycle}

Discount of $15\%$ → paid $85\%$ of usual price. Let $x = \text{usual price}$.

$\$340$ is $85\%$ of $x$. 

$$0.85x = 340$$

$$x = \frac{340}{0.85} = \$400$$

The usual price is $\$400$.

#8) WHOLE UNIT = \text{English test score}

Let $x = \text{English test score}$.

$84$ is $105\%$ of $x$. 

$$1.05x = 84$$

$$x = \frac{84}{1.05} = 80$$

She scored 80 on her English test.

#9) WHOLE UNIT = \text{amt spent last week}

Let $x = \text{amt spent last week}$.

$\$55$ is $110\%$ of $x$. 

$$1.1x = 55$$

$$x = \frac{55}{1.1} = \$50$$

He spent $\$50$ last week.
(10) WHOLE UNIT = number of girls

There are 40 girls and 40 + 4 = 44 boys
So 40 + 44 = 84 children altogether

4) (a) Exercise 3.5 If a price is reduced by 20% and then the sale price is reduced by 30%, what percent is the overall reduction?

You are paying 70% of 80% of the original price
(0.7)(0.80) = 0.56
You pay 56% of the original price; The overall reduction is 44%

(b) (6A, Practice 4D, p 67)

(1) Let x = monthly salary
20% of x is $240

\[ 0.2x = 240 \]
\[ x = \frac{240}{0.2} = 1200 \]

(2) 35% of the books are for children
Let x = number of books
280 is 35% of x

\[ 0.35x = 280 \]
\[ x = \frac{280}{0.35} = 800 \]

(5) Let x = usual price of fan
70% of x is $140

\[ 0.7x = 140 \]
\[ x = \frac{140}{0.7} = 200 \]

(6) Let x = usual price of dress
25% of x is $15

\[ 0.25x = 15 \]
\[ x = \frac{15}{0.25} = 60 \]
5) (6A, Practice 4E, p.68)

(#1) 1.5 kg = 1500 g \quad \frac{600}{1500} = \frac{2}{5} = \frac{40}{100} = 40\% 

(#2) 40\% \rightarrow 16 \quad \frac{1}{4} \times 4
10\% \rightarrow 4 \quad \frac{1}{4} \times 6
60\% \rightarrow 24 
There are 24 boys 

(#3) Let x = supervisor's pay 
#1500 is 80\% of x 
0.8x = 1500 
x = \frac{1500}{0.8} = \$1875 

(#4) discount of 10\% \rightarrow pay 90\% of usual price 
Let x = usual price
$45 \rightarrow 90\% of x \quad 0.9x = 45
x = \frac{45}{0.9} = \$50 

(#5) Tim answered 80\% of 50 or \((0.8)(50) = 40\) questions
Carlos answered 90\% of 50 or \((0.9)(50) = 45\) questions
(a) Carlos answered 5 more questions correctly than Tim 
(b) 5 is what percent of 40? \(\frac{5}{40} = \frac{1}{8} = 100 \times \frac{1}{8} \% = 12.5\% 

(#6) 60\% of 200 = \((0.6)(200) = 120\) males \(\rightarrow\) 200 - 120 = 80 females 
There are 40 more males than females 
(Express the difference as a percentage of the number of females) 
\(\frac{40}{80} = \frac{1}{2} = 50\% 
There are 50\% more males than females. 

(#7) First 40\% of beads are red
So 60\% of beads are yellow

R | Y 
36 | ? 

\(60\% - 40\% = 20\% 
20\% \rightarrow 36 \times 5 
100\% \rightarrow 180 \)
There are 180 beads altogether
Libby: discount of 20% → paid 80% of usual price

WHOLE UNIT: usual price of watch

80% → $600
20% → $150
100% → $750

So the usual price is $750

Scott paid $630, so he got $120 off

\[
\frac{120}{750} = \frac{4}{25} = \frac{16}{100} = 16\%
\]

He got a discount of 16%.

Let \( x \) = Alice's salary

So \( 1.1x \) = Mary's salary

\[
x + 1.1x = 4200
\]

\[
2.1x = 4200
\]

\[
x = \frac{4200}{2.1} = 2000
\]

So Mary's is \( (1.1)(2000) = 2200\)

Spent 20% of his money on food → 80% of his money left

Spent \( \frac{2}{5} \) (80%) or 32% of his money on a toy

Let \( x \) = amt of money at first

\[
\cdot32x = 12
\]

\[
x = \frac{12}{.32} = 37.50
\]

Alt.

Whole unit = Alice's salary

210% → $4200
100% → $2000
107% → $2070

So Mary's is $2200

Using a unit of weight so that Woody's initial weight is 100 units,

Lost 25% → weighs 75 units
Gained 20% → weighs 90 units
Lost 10% → weighs 81 units
Gained 20% → weighs 97.2 units

He lost weight that year.

If Woody initially weighed \( x \) lbs,

Lost 25% → weighs 75% of \( x \) or \( .75x \)

Gained 20% → weighs 120% of \( .75x \) or \( (1.2)(.75x) = .9x \)

Lost 10% → weighs 90% of \( .9x \) or \( (.9)(.9x) = .81x \)

Gained 20% → weighs 120% of \( .81x \) or \( (1.2)(.81x) = .972x \)

He weighs 97.2% of his initial wt.