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

(#1) (a) 9% of 125 = (.09)(125) = 11.25

(b) 78% of 900 = (.78)(900) = 702

(c) 30% of $250 = (.3)(250) = $75

(d) 45% of 400m = (.45)(400) = 180 m

(e) 21% of 50 ℓ = (.21)(50) = 10.5 ℓ

(f) 16% of 60 kg = (.16)(60) = 9.6 kg

(#2) 4% of #1500 = (.04)(1500) = #60

(#3) 40% of 15 = (.4)(15) = 6 arrows hit the target
→ 9 arrows did <u>not</u> hit

(alt 40% of arrows hit → 60% of arrows did <u>not</u> hit; 60% of 15 = (.6)(15) = 9 did <u>not</u> hit)

(#4) 64% are air conditioned → 36% are <u>not</u> air conditioned
36% of 125 = (.36)(125) = 45 are <u>not</u> air-conditioned

(#5) 5% of #200 = (.05)(200) = #10 discount; so selling price = #200 − #10 = #190

(alt/ 5% discount → selling price is 95% of #200; (.95)(200) = #190)

(#6) 5% of #1400 = (.05)(1400) = #70
So his monthly salary after the increase = #1470

(alt/ his monthly salary after the increase = 105% of #1400 = (1.05)(1400) = #1470)

(#7) OK to add percentages here since of the same quantity
60% + 24% = 84% → 100% − 84% = 16% of the stamps are European
16% of 300 = (.16)(300) = 48 European stamps

(#8) After making the meatballs, she has 1600g − 350g = 1250g left. She used 80% of the remainder for hamburgers. So she'll have 20% of 1250g left; (.2)(1250) = 250g left

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

(#10) 60% of class are GIRLS, so 40% are BOYS
(.6)(40) = 24 GIRLS, so 40 − 24 = 16 BOYS (or (.4)(40) = 16)
50% of the girls wear glasses; so $\frac{1}{2}$(24) = 12 girls wear glasses
25% of the boys wear glasses; so $\frac{1}{4}$(16) = 4 boys wear glasses
So 12 + 4 = 16 students wear glasses (alt 50% of 60% = $\frac{1}{2}$(60%) = 30%
25% of 40% = $\frac{1}{4}$(40%) = 10%
So 40% of class wears glasses
(.4)(40) = 16 students wear glasses)

2) Let x = original price \$26 is 65% of x So $.65x = 26$

$$x = \frac{26}{.65} = \$40$$

The orig price of the shirt was \$40

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

(#7) WHOLE UNIT = usual price of the bicycle

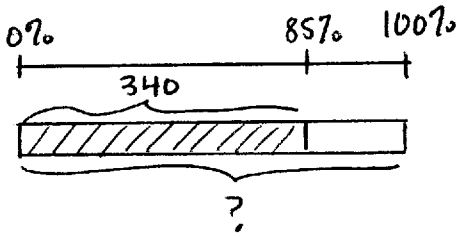
discount of 15% → paid 85% of usual price Let x = usual price

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

$$x = \frac{340}{.85} = \$400$$

The usual price is \$400

alt/



85% → \$340 ↘ ÷17

5% → \$20 ↘ ×20

100% → (\$400)

(#8) WHOLE UNIT = English test score

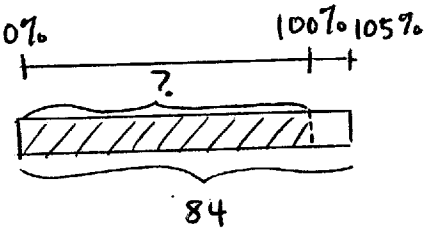
Let x = English test score

84 is 105% of x $1.05x = 84$

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

She scored 80 on her English test

alt/



105% → 84 ↘ ÷21

5% → 4 ↘ ×20

100% → (80)

(#9) WHOLE UNIT = amt spent last week

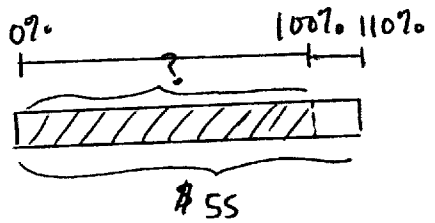
Let x = amt spent last week

\$55 is 110% of x $1.1x = 55$

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

He spent \$50 last week

alt/

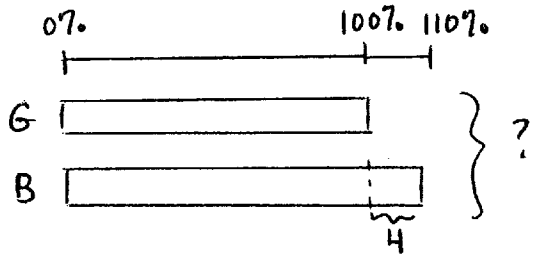


110% → \$55 ↘ ÷11

10% → \$5 ↘ ×10

100% → (\$50)

(#10) WHOLE UNIT = number of girls



10% → 4 (×10)
100% → 40

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
(.7)(80%) = 56%
You pay 56% of the original price; The overall reduction is (44%) of the original price

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

(#1) Let x = monthly salary
20% of x is $240
.2x = 240
$x = \frac{240}{.2} =$ ($1200)

alt/ 20% → $240 (×5)
100% → ($1200)

(#4) 35% of the books are for children
Let x = number of books
280 is 35% of x
.35x = 280
$x = \frac{280}{.35} =$ (800)

alt/
35% → 280 (÷7)
5% → 40 (×20)
100% → (800)

(#5) Let x = usual price of fan
70% of x is $140
.7x = 140
$x = \frac{140}{.7} =$ ($200)

alt/ 70% → $140 (÷7)
10% → $20 (×10)
100% → ($200)

(#6) Let x = usual price of dress
25% of x is $15
.25x = 15 → $\frac{1}{4}x = 15$
$x = 4 \cdot 15 =$ ($60)

alt/ 25% → $15 (×4)
100% → ($60)

5) (6A, Practice 4E, p 68)

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

(#2) 40% → 16 ↓ ÷4
10% → 4 ↓ ×6
60% → (24)
There are 24 boys

(#3) Let x = supervisor's pay
#1500 is 80% of x
$.8x = 1500$
$x = \frac{1500}{.8} =$ (#1875)

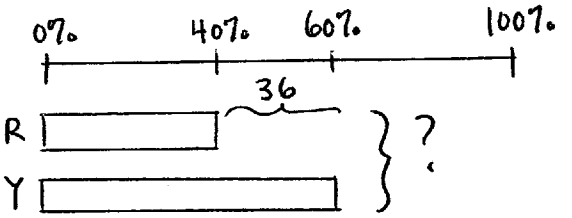
(#4) discount of 10% → pay 90% of usual price
Let x = usual price
#45 is 90% of x
$.9x = 45$
$x = \frac{45}{.9} =$ (#50)

alt/
90% → #45
10% → #5
100% → (#50)

(#5) Tim answered 80% of 50 or (.8)(50) = 40 questions
Carlos answered 90% of 50 or (.9)(50) = 45 questions
(a) Carlos answered 5 more questions correctly than Tim
(b) 5 is what percent of 40? $\frac{5}{40} = \frac{1}{8} = 100 \cdot \frac{1}{8}\% = 12.5\%$

(#6) 60% of 200 = (.6)(200) = 120 males → 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

60% − 40% = 20%

20% → 36 ↓ ×5
100% → (180)

There are 180 beads altogether

(#8) 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%)

(#9) 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 $(1.1)(2000) = (\$2200)$

alt/ WHOLE UNIT = Alice's salary

210% → $4200
10% → $200
100% → $2000

So Mary's is $2200

(#10) 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

$12 is 32% of x → $.32x = 12$

$x = \frac{12}{.32} = (\$37.50)$

alt/

32% → $12 ÷8
4% → $1.50 x25
100% → ($37.50)

6) 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.