Errata for Light Blue Grade 7

7-A Chapter 2: Lesson: Chapter 2 Review

Answer for #11 was expanded to be:

11. The expression for the distance can be written as | −6 m − (−8 m) | or | −8 m − (−6 m) |. It can be written even without absolute value, as −6 m − (−8 m) because we know which number is greater and we can subtract the smaller number (−8 m) from the greater (−6 m). Each one of those will give the correct distance, 2 m. If we were dealing with variable(s), the distance would need to be expressed as the absolute value of the difference of the two quantities.

7-A Chapter 4: Lesson: Scientific Notation

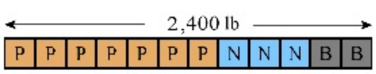
Student worktext, question #7. In the "Down" clues for the puzzle, the last one was labled as "d" when it should have been labeled as "f".

It was:
d. 5.3 · 104

Should be:
f. 5.3 · 104

7-A Chapter 5: Lesson: Some Problem Solving

The teaching box image was wrong and has been changed from 24,000 to 2,400.



Some Problem Solving

Ratio problems and equations

Example 1. A truck is carrying 21 pallets of beans. Each pallet weighs 2,400 pounds and contains bags of pinto beans, navy beans, and black beans in a ratio of 7:3:2. Find the *total* weight of each type of beans in the truck.

We can solve this using a bar model. The entire bar signifies one pallet.

There are 7 + 3 + 2 = 12 parts in total. The weight of one part is 2,400 lb ÷ 12 = 200 lb.

Or we can write an equation. The unknown x is the same as in the bar model: it is one part.

$7x + 3x + 2x$	=	2,400	
$12x$	=	2,400	÷ 12
x	=	200	

But the weight of one part is not the final answer! We need to calculate the total weight of each type of beans:

- pinto beans: 21 · 7 · 200 lb = 29,400 lb
- navy beans: 21 · 3 · 200 lb = 12,600 lb
- black beans: 21 · 2 · 200 lb = 8,400 lb

7-B Chapter 6: Lesson: Scaling Figures

The answer key was expanded.

Scaling Figures, p. 41

1. a. Example solution (proportion): $\dfrac{3}{5} = \dfrac{2.4 \text{ cm}}{x}$

$$3x = 5 \cdot 2.4 \text{ cm}$$

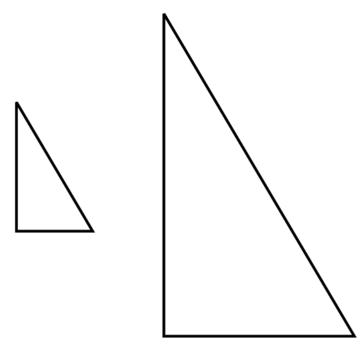
$$x = \frac{12 \text{ cm}}{3} = 4 \text{ cm}$$

b. Example solution: x = 238 cm/7 · 3 = <u>102 cm</u>

2. The scale ratio 3:4 means that the sides of the smaller triangle are 3/4 the length of the sides of the larger triangle. So we can just multiply each side of the larger triangle by Å¸ to get the lengths of the sides of the smaller triangle:

Å¸ · (4.8 cm) = 3.6 cm,
Å¸ · (6.0 cm) = 4.5 cm, and
Å¸ · (3.6 cm) = 2.7 cm.

3. Answers will vary, but the corresponding angles of the two triangles must be equal, and the sides of the larger triangle must be 5/2 = 2.5 times longer than the sides of the smaller one. Please check the student's work.



4. a.

	Length	Width	Aspect Ratio
Rectangle 1	1 cm	3 cm	1 : 3
Rectangle 2	1.5 cm	4.5 cm	1 : 3
Rectangle 3	2 cm	6 cm	1 : 3
Rectangle 4	2.5 cm	7.5 cm	1 : 3

b. The aspect ratio for all four triangles is the same, 1:3.

5. a. x / 72 cm = 24 cm / 54 cm; x = 32 cm.
There are three other ways to write a correct proportion and get the correct answer:
72 cm / x = 54 cm / 24 cm ; x / 24 cm = 72 cm / 54 cm;   and 24 cm / x = 54 cm / 72 cm.

b. x / 43 m = 16 m / 20 m; x = 34.4 m.

There are three other ways to write a correct proportion and get the correct answer:
43 m / x = 20 m / 16 m ; x / 16 m = 43 m / 20 m; and 16 m / x = 20 m / 43 m.

6. a. Scale factor = *after* / *before* = 14 cm / 6 cm = 7/3 ≈ 2.33.
b. Scale ratio = *after* : *before* = 14 cm : 6 cm = 7:3.

7. a. Scale ratio = *after* : *before* = 15 ft : 20 ft = 36 ft : 48 ft = 3 : 4
b. Scale factor = *after* / *before* = 15 ft / 20 ft = 36 ft / 48 ft = Å¸ = 0.75

Scaling Figures, cont.

8. If the area of the original square is 36 cm^2, then each side must be 6 cm long. Each side of the reduced square will be Å¸ · 6 cm = 4.5 cm. So the area of the reduced square is $(4.5\ cm)^2$ = 20.25 cm^2.

9. Please check the student's work. The size of the shape will vary according to how the page was printed. If the page was printed using a "scale to fit" or "print to fit" option, the actual measurements of the shape may not match what is given below. However, the scale ratio and the scale factor should be the same or very close, even if the page wasn't printed at 100%.

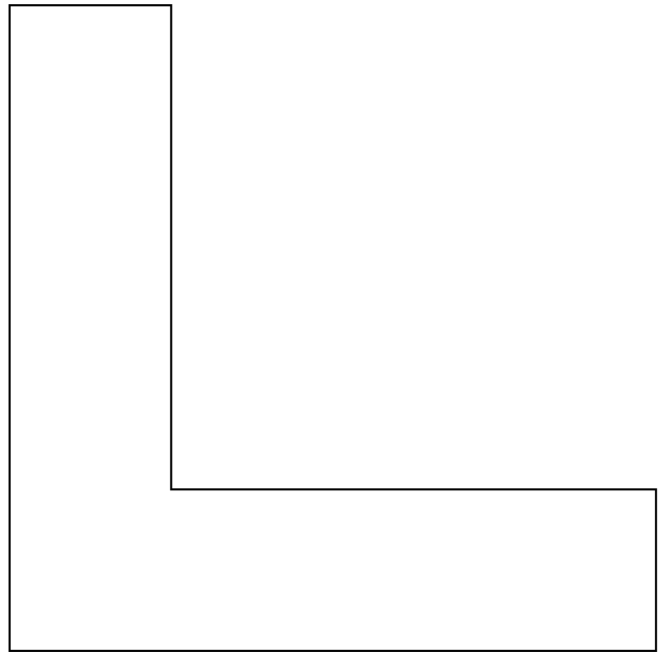
The bottom sides of the two triangles measure 2.3 cm and 5.7 cm, so the scale ratio is 57:23. The scale factor is 57/23 ≈ 2.5.

10. Please check the student's work. The size of the shape will vary according to how the page was printed. If the page was printed using a "scale to fit" or "print to fit" option, the actual measurements of the L-shape may not match what is given below.

The scale ratio 3:2 means the dimensions are multiplied by 3:2 = 1.5. The bottom width and the height of the L-shape both are 5.7 cm. These become 1.5 · 5.7 cm = 8.55 cm ≈ 8.6 cm.

In inches, the bottom width and the height of the original L-shape are 2 ¼ in and become 1.5 · 2 Å’ in = 3 3/8 in.

See the image on the right.



11. a. The sides are in the ratio: *after* : *before* = Å¸″ : 3″ = 1:4.

b. Let x be the second side of the similar rectangle. Since the *after* : *before* ratio is 1:4, the longer side of the second triangle is one-fourth the longer side of the first triangle: x = 4 Å“″ ÷ 4 = 1 1/8″.
You can also solve this using the proportion x / 4 Å“″ = Å¸″ / 3″; from which x = 1 1/8″.
These proportions work also: 4 Å“″ / x = 3 / Å¸″ or x / Å¸″ = 4 Å“″ / 3″ or Å¸″ / x = 3″ / 4 Å“″.

c. Area of the original rectangle: 4 Å“ in · 3 in = 13 Å“ in^2 = 13.5 in^2.
Area of the similar rectangle: Å¸ in · 9/8 in = 27/32 in^2 or 0.75 in · 1.125 in = 0.84375 in^2.

d. The areas are in the ratio: *after* : *before* = 27/32 in^2 : 13 1/2 in^2 = 27/32 : 27/2 = (27/32) · (2/27) = 1/16 = 1:16.
Or, using decimals, the ratio is *after* : *before* = 0.84375 in^2 : 13.5 in^2 = 0.0625 = 0.0625 : 1 = 1:16.
So the ratio of the areas is the <u>square</u> of the ratio of the sides (square of the ratio 1:4).

Puzzle corner:
If the aspect ratio is 2:3, then the lengths of the sides are $2x$ and $3x$. Thus the perimeter is 50 cm = $2x + 3x + 2x + 3x = 10x$, so x is 5 cm. Therefore the sides are 10 cm and 15 cm long.

Shrinking the rectangle at a scale ratio of 2 : 5 is the same as changing x from 5 cm to 2 cm, so the sides of the shrunken rectangle are 2 · 2 cm = 4 cm and 2 · 3 cm = 6 cm, and its area is 4 cm · 6 cm = 24 cm^2.

7-B Chapter 6: Lesson: Chapter 6 Review

5. a.

5.

a. $\frac{16}{17} = \frac{109}{T}$	b. $\frac{1.5}{2.8} = \frac{M}{5}$
$16T = 17 \cdot 109$	$2.8M = 1.5 \cdot 5$
$16T = 1853$	$2.8M = 7.5$
$\frac{16T}{16} = \frac{1853}{16}$	$\frac{2.8M}{2.8} = \frac{7.5}{2.8}$
$\mathbf{T = 115.81}$	$\mathbf{M = 2.68}$

7-B Chapter 6: Lesson: Percent Equations

ORIGINAL — which is not wrong, just convoluted:

12. Answers will vary. Please check the student's work.

Substituting numbers: Suppose the base *b* were 3 km and the height *h* were 4 km to give A = ½ *bh* = ½ (3 km · 4 km) = 6 km^2. Increasing 3 km and 4 km by 10% gives the increased area A′ = ½ (3.3 km · 4.4 km) = ½ (14.52 km^2) = 7.26 km^2, which is an increase of 1.26 km / 6 km = 21%.

Using algebra: The formula for the area of a triangle is A = ½ *bh* = 6 km^2, where A is the 6-km^2 area, *b* is the base, and *h* is the height. In this case we have A′ = ½ *b′h′*, where A′ is the area of the increased plot, *b′* its base, and *h′* its height. Because the increase is 10%, we know that *b′* = 1.1*b* and *h′* = 1.1*h*. If we substitute into the formula for A′, we get A′ = ½ *b′h′* = ½ (1.1*b*)(1.1*h*) = 1.21 (½ *bh*). Since A = ½ *bh* = 6 km^2, we get A′ = 1.21 A = 7.26 km^2. The size of the increased plot is 121% of the original plot, so the increase was 21%.

Using logic: The easiest way to solve this problem is with a little insight: We see that when we increase *b* and *h* by 10% in A = ½ *bh*, the new *b* and *h* are 110% or 1.1 times the old ones. Since the ½ in the formula doesn't change, the new area is just 1.1 · 1.1 = 1.21 times the old area, so the increase is 21%.

NEW — improved and simplified:

12. Answers will vary. Please check the student's work.

Substituting numbers: Suppose the base *b* were 3 km and the height *h* were 4 km to give A = ½ *bh* = ½ (3 km · 4 km) = 6 km^2. Increasing 3 km and 4 km by 10% gives the increased area A′ = ½ (3.3 km · 4.4 km) = ½ (14.52 km^2) = 7.26 km^2, which is an increase of 1.26 km / 6 km = 21%.

Using algebra: The formula for the area of a triangle is A = ½ *bh*. Let's use *b* and *h* for the base and height of the original triangle, and *b*' for the base and *h*' for the height of the bigger triangle.

Because the increase is 10%, we know that *b*' = 1.1*b* and *h*' = 1.1*h*. If we substitute those into the formula for the area, we get area of the bigger triangle as A_{big} = ½ *b*'*h*' = ½ (1.1*b*)(1.1*h*) = 1.21 (½ *bh*). In the last expression, the part ½ *bh* is the area of the original triangle, so we can write A_{big} = 1.21 (½ *bh*) = 1.21 A, where A is the area of the original triangle.

So, since area of the bigger triangle is 1.21A, that means it is 121% of A, which means the increase in area is 21%.

7-B Chapter 7: Lesson: Comparing Values Using Percentages

Answer key

4. WAS:
   The difference in area is... 25%.

   SHOULD BE: 33%

   Also, in the same answer, the number 12,000 is incorrectly typed as 12.000

7-B Chapter 7: Lesson: Review Percent

2. e. in the worktext should be 1039/10000

2. f. In the answer key, should be

340.9% = 3409/1000 = 3.409

7-B Chapter 8: Lesson: Angle Relationships

Answer key.

WAS:
13. a. $\angle B = \angle A = 109°$ $\angle C = 180° - 109° = 71°$ $\angle D = \angle C = 71°$

SHOULD BE:
13. a. $\angle B = 180° - \angle A = 71°$ $\angle C = \angle A = 109°$ $\angle D = \angle B = 71°$

7-B Chapter 8: Lesson: Area of a Circle

Question #1, student worktext.

WAS
After that, calculate the area
to the nearest hundredth of a square unit.

CHANGED TO
After that, calculate the area
to the nearest tenth of a square unit.

Answer key.
Question #1.

WAS

a. Estimation: 16 + 4 · 2 1/4 = 26 square units
   Calculation: 28.26 square units

CHANGED TO

a. Estimation: 16 + 4 · 2 1/4 = 26 square units
   Calculation: 3.14(3 · 3) = 28.26 square units ≈ 28.3 square units

WAS

b. Estimation: 2 · (8 + 7.5 + 5.5 + 3.5) = 49 square units
   Calculation: 50.24 square units

CHANGED TO

b. Estimation: 2 · (8 + 7.5 + 5.5 + 3.5) = 49 square units
   Calculation: 3.14(4 · 4) = 50.24 square units ≈ 50.2 square units