



Answer Key

# **GRADE 3 • MODULE 2**

Place Value and Problem Solving with Units of Measure

## Lesson 1

### Problem Set

1. Times will vary.
2. Times will vary.
3. Times will vary.
4. Times will vary.
5. Times will vary.
6. Times will vary.

### Exit Ticket

- a. Jake
- b. Riley and Nicholas
- c. 3 seconds

### Homework

1.
  - a. Dominique
  - b. Chester
  - c. 5 seconds
2. Activities will vary.
3. First clock—10:15  
Second clock—2:50  
Third clock—11:00  
Fourth clock—7:05

## Lesson 2

### Problem Set

- First and last tick marks labeled as 7:00 a.m. and 8:00 a.m.
  - Each interval labeled by fives below the number line up to 8:00 a.m.
  - Point D plotted and labeled above 7:10 a.m.
  - Point E plotted and labeled above 7:35 a.m.
  - Point T plotted and labeled above 7:40 a.m.
  - Point L plotted and labeled above 7:45 a.m.
  - Point W plotted and labeled above 7:55 a.m.
- Every 5 minutes labeled below the number line  
First clock not matched to the number line  
Second clock—5:50 p.m.  
Third clock—5:15 p.m.  
Fourth clock not matched to the number line  
Fifth clock—5:40 p.m.  
Last clock—5:25 p.m.
- First and last tick marks labeled as 5:00 p.m. and 6:00 p.m.; each interval labeled by fives below the number line up to 6:00 p.m.; 5:45 p.m. located and plotted on the number line
- Yes; because *a.m.* means the morning and *p.m.* means the afternoon or nighttime

### Exit Ticket

- |               |               |
|---------------|---------------|
| a. 10:10 a.m. | c. 10:50 a.m. |
| b. 10:20 a.m. | d. 1 hour     |

**Homework**

- a. First and last tick marks labeled as 4:00 p.m. and 5:00 p.m.
- b. Each interval labeled by fives below the number line up to 4:00 p.m.
- c. Point W plotted and labeled above 4:05 p.m.
- d. Point F plotted and labeled above 4:15 p.m.
- e. Point G plotted and labeled above 4:25 p.m.
- f. Point B plotted and labeled above 4:50 p.m.
- g. Point P plotted and labeled above 4:55 p.m.

## Lesson 3

### Problem Set

- The times shown on the clocks are plotted correctly on the number line.  
First clock—7:17 p.m.  
Second clock—7:03 p.m.  
Third clock—7:55 p.m.  
Fourth clock—7:41 p.m.  
Fifth clock—answer provided
- Hands on the clock drawn to show 6:48 a.m.
- Hands on the clock drawn to show 8:23 a.m.
- 5:27 p.m.
- 3:56 p.m.
  - 3:45 p.m.

### Exit Ticket

- 8:03 a.m.
- Hands on the clock drawn to show 8:23 a.m.
- The first and last tick marks labeled as 8:00 a.m. and 9:00 a.m.; Point A plotted and labeled above 8:03 a.m.; Point B plotted and labeled above 8:23 a.m.

### Homework

- The times shown on the clocks are plotted correctly on the number line.  
First clock—4:34 p.m.  
Second clock—4:01 p.m.  
Third clock—4:16 p.m.  
Fourth clock—4:53 p.m.  
Fifth clock—answer provided
- Hands on the clock drawn to show 6:07 p.m.
- Hands on the clock drawn to show 1:32 p.m.
- 2:32 p.m.
  - 2:55 p.m.
  - 55 p.m.
  - First and last tick marks labeled 2:00 p.m. and 3:00 p.m.; Point B plotted and labeled above 2:32 p.m.; Point F plotted and labeled above 2:55 p.m.

## Lesson 4

### Problem Set

- 26
- 2:08
- 31
- 4:09
- 9:52
- 19 min
- 11:58 a.m.
- 1:17 p.m.

### Exit Ticket

- Hands on the first clock are drawn to show 1:34 p.m.
- Hands on the second clock are drawn to show 1:56 p.m.
- 22 min

### Homework

- 31
- 3:22
- 33
- 2:11
- 36 min
- Times will vary.

## Lesson 5

### Problem Set

- 53; problem modeled on number line;  $25 + 28 = 53$
- 22; problem modeled on number line;  $34 - 12 = 22$
- 17; problem modeled on number line;  $47 - 30 = 17$
- 29 minutes
  - No; Austin will be 4 minutes late.
- 11:13

### Exit Ticket

36; problem modeled on number line;  $19 + 17 = 36$

### Homework

- 56; problem modeled on number line;  $22 + 34 = 56$
- 9 minutes; problem modeled on number line;  $56 - 47 = 9$
- 30 minutes
- 47 minutes
  - No; Marcus will be 2 minutes late.
- 27 minutes

## Lesson 6

### Problem Set

1. Illustrations and descriptions will vary.
2. Illustrations and descriptions will vary.
3. Illustrations and descriptions will vary.
4. Illustrations and descriptions will vary.
5. Answers will vary; both charts grow by units of 10.

### Exit Ticket

100 grams

### Homework

1.
  - a. 10
  - b. 10
  - c. 10
  - d. They all need 10 to get to the next unit.
2. Top row, left to right: 3 kilograms; 6 kilograms; 450 grams  
Bottom row, left to right: 907 grams; 11 kilograms; 1 kilograms



## Lesson 7

### Problem Set

- A. Objects and weights will vary.
- B. Objects and weights will vary.
- C. Objects and weights will vary.
- D. Objects and weights will vary.
- E.
  - 1. grams
  - 2. kilograms
  - 3. grams
  - 4. kilograms
  - 5. kilograms
  - 6. grams
- F. 2 kilograms since 1 bottle of water weighs about 1 kilogram
- G. Yes; 10 units of 100 grams equal 1000 grams, which is the same as 1 kilogram

### Exit Ticket

- 1. 146 g; 12 kg
- 2.
  - a. grams
  - b. grams
  - c. kilograms
  - d. grams
  - e. kilograms

### Homework

- 1. Water bottle—1 kilogram  
Paper clip—1 gram  
4 pennies—10 grams  
Apple—100 grams
- 2. Grams; because 113 kilograms is too heavy for a cell phone
- 3. 25 kilograms; 9 kilograms; 200 grams  
367 grams; 105 grams

## Lesson 8

### Problem Set

- 464; 355
- 78; problem modeled with tape diagram
  - 8; problem modeled with tape diagram
- Tape diagram drawn correctly; about 15 kg
- About 3 kg
  - About 21 kg

### Exit Ticket

- 14 kg
- 28 kg
- 3 backpacks

### Homework

- C
  - B
  - 4
  - 36 kg
- 840 g
- 430 g
- 91 kg
  - 125 kg
- 7 kg
  - 5 kg

## Lesson 9

### Problem Set

- a. Estimations will vary.
- b. Answers will vary.
- c. Illustrations and descriptions will vary.
- d. Illustrations and descriptions will vary.
- e. Illustrations and descriptions will vary.
- f. They both break apart into 1 thousand units. 1 liter is 1000 milliliters, and 1 kilogram is 1000 grams.
- g. 1 gram; 1 liter is the same as 1 kilogram, and they break apart the same way into 1 thousand units.

### Exit Ticket

1. .25
2. 100 groups; there are 10 groups of 10 milliliters in 100 milliliters, and there are 10 groups of 100 milliliters in 1 liter.

### Homework

1.
  - a. Answers will vary.
  - b. Answers will vary.
2. 15 mL
3. 708 mL
4. 6 buckets
5. 5 L

## Lesson 10

### Problem Set

- Vertical number line on container labeled by hundreds
  - 500 mL; reasons will vary.
  - Explanations will vary.
  - 700 mL
- 3 L; 6 L; 4 L; 0 L
- 400 mL; 200 mL; 1000 mL; 700 mL
- Capacity of each barrel plotted and labeled correctly on number line
  - Barrel C
  - Barrel D
  - Barrel B; because it is closest to 70 mL
  - Number line used to find answer; 28 more liters

### Exit Ticket

- 45 L
  - 57 L
  - 21 L
- 24 L

### Homework

- 5 L; 2 L; 6 L; 1 L
- 11 L
- 5 L; 2 L; 4 L; 2 L
- Capacity of each gas tank plotted and labeled on number line
  - Large
  - Small
  - Medium
  - Number line used to find answer; 32 more liters

## Lesson 11

### Problem Set

- a.
  - b. 445 g
- a. 60 g
  - b. 142 g
- a. 191 g
  - b. 123 g
  - c. 194 g
4. Tape diagram drawn and labeled to represent the problem; 9 turkeys
5. 900 mL of milk
6. 14 L

### Exit Ticket

- a. 677 mL
- b. 140 mL
- c. 480 mL

### Homework

1. 687
2. 104
3. 54 L
4. 8 beds
5. 35 mL

## Lesson 12

### Problem Set

1. Measurements and estimates will vary.
2. Measurements and estimates will vary.
3. Measurements and estimates will vary.
4. Measurements and estimates will vary.

### Exit Ticket

- a. 46 g
- b. Rounding modeled on number line
- c. 50 g
- d. 46 g is more than halfway between 40 g and 50 g on the number line, so 46 g rounds up to 50 g.

### Homework

1. Measurements and estimates will vary.
2. 10:30
3. 20
4. 53; 50
5. 58; 60

## Lesson 13

### Problem Set

- 30
  - 40; rounding modeled on number line
  - 60; rounding modeled on number line
  - 160; rounding modeled on number line
  - 280; rounding modeled on number line
  - 410; rounding modeled on number line
- Number line drawn and labeled to model rounding; 40 g  
Number line drawn and labeled to model rounding; 50 g  
Number line drawn and labeled to model rounding; 140 g
- 48 min
  - 50 min

### Exit Ticket

- 30; rounding modeled on number line
  - 280; rounding modeled on number line
- No; 603 is less than halfway between 600 and 610, so 603 rounded to the nearest ten is 600; number line drawn and labeled to model rounding

**Homework**

1.
  - a. 40
  - b. 50; rounding modeled on number line
  - c. 70; rounding modeled on number line
  - d. 170; rounding modeled on number line
  - e. 190; rounding modeled on number line
  - f. 190; rounding modeled on number line
2. Number line drawn and labeled to model rounding; 50 g  
Number line is drawn and labeled to model rounding; 670 g
3. 60 g; number line drawn and labeled to model rounding



## Lesson 14

### Sprint

#### Side A

- |        |         |           |           |
|--------|---------|-----------|-----------|
| 1. 5   | 12. 85  | 23. 285   | 34. 75    |
| 2. 15  | 13. 95  | 24. 585   | 35. 1,075 |
| 3. 25  | 14. 95  | 25. 585   | 36. 1,575 |
| 4. 75  | 15. 85  | 26. 35    | 37. 485   |
| 5. 75  | 16. 55  | 27. 935   | 38. 1,485 |
| 6. 45  | 17. 155 | 28. 65    | 39. 1,085 |
| 7. 45  | 18. 255 | 29. 465   | 40. 355   |
| 8. 35  | 19. 755 | 30. 95    | 41. 1,785 |
| 9. 35  | 20. 755 | 31. 895   | 42. 395   |
| 10. 65 | 21. 85  | 32. 995   | 43. 1,835 |
| 11. 65 | 22. 185 | 33. 1,005 | 44. 1,105 |

#### Side B

- |        |         |           |           |
|--------|---------|-----------|-----------|
| 1. 15  | 12. 85  | 23. 275   | 34. 25    |
| 2. 25  | 13. 95  | 24. 675   | 35. 1,025 |
| 3. 35  | 14. 95  | 25. 675   | 36. 1,525 |
| 4. 65  | 15. 85  | 26. 25    | 37. 385   |
| 5. 65  | 16. 65  | 27. 925   | 38. 1,385 |
| 6. 55  | 17. 165 | 28. 55    | 39. 1,085 |
| 7. 55  | 18. 265 | 29. 455   | 40. 755   |
| 8. 45  | 19. 565 | 30. 95    | 41. 1,685 |
| 9. 45  | 20. 565 | 31. 895   | 42. 295   |
| 10. 75 | 21. 75  | 32. 995   | 43. 1,845 |
| 11. 75 | 22. 175 | 33. 1,005 | 44. 1,215 |

**Problem Set**

1.
  - a. 100; rounding modeled on number line
  - b. 300; rounding modeled on number line
  - c. 300; rounding modeled on number line
  - d. 1,300; rounding modeled on number line
  - e. 1,600; rounding modeled on number line
  - f. 1,300; rounding modeled on number line
2.
  - a. 500 stickers
  - b. 500 pages
  - c. 800 mL
  - d. \$1,300
  - e. 1,800 km
3. 550, 639, 603
4. Both are correct; explanations will vary.

**Exit Ticket**

1.
  - a. 100; rounding modeled on number line
  - b. 1800; rounding modeled on number line
2. 700 people

**Homework**

1.
  - a. 200; rounding modeled on number line
  - b. 300; rounding modeled on number line
  - c. 300; rounding modeled on number line
  - d. 1,300; rounding modeled on number line
  - e. 1,700; rounding modeled on number line
  - f. 1,800; rounding modeled on number line
2.
  - a. 200 cards
  - b. 500 people
  - c. 400 milliliters
  - d. 700 grams
  - e. \$1,300
3. 368, 420, 449
4. Both are correct; explanations will vary.

## Lesson 15

### Problem Set

- 51 mL
  - 71 mL
  - 171 mL
  - 89 cm
  - 592 cm
  - 627 cm
  - 92 g
  - 639 g
  - 956 g
  - 3 L 657 g
  - 5 kg 876 g
- 107 g
- $475 \text{ mL} + 317 \text{ mL} = 792 \text{ mL}$ ; Andrea is correct; explanations will vary.
- 47 min

### Exit Ticket

- 60 cm
  - 742 m
  - 584 km
- 41 min
  - 67 min

### Homework

- 82 cm
  - 95 kg
  - 591 mL
  - 375 g
  - 790 mL
  - 480 L
- 373
  - 444
- 119 students; tape diagram drawn and labeled to represent the problem
- 63 cm
- Paperback book and bar of soap;  
 $343 \text{ g} + 117 \text{ g} = 460 \text{ g}$

## Lesson 16

### Problem Set

- 120 mL
  - 420 mL
  - 820 mL
  - 150 cm
  - 600 cm
  - 900 cm
  - 835 g
  - 942 g
  - 983 g
  - 4 L 800 mL
  - 6 kg 851 g
- Tape diagram drawn and labeled; 1,000 g
- 144 muffins
- 741 mL

### Exit Ticket

- 107 g
  - 617 kg
  - 802 L
- 104 L

**Homework**

1.
  - a. 55 m
  - b. 85 m
  - c. 530 m
  - d. 72 mL
  - e. 542 mL
  - f. 642 mL
  - g. 631 kg
  - h. 801 kg
  - i. 902 kg
  - j. 6 L 556 mL
  - k. 8 kg 622 g
2. Tape diagram drawn and labeled; 101 minutes
3. 324
4. 802

## Lesson 17

### Sprint

#### Side A

- |        |        |         |           |
|--------|--------|---------|-----------|
| 1. 20  | 12. 50 | 23. 80  | 34. 640   |
| 2. 30  | 13. 80 | 24. 90  | 35. 670   |
| 3. 40  | 14. 70 | 25. 100 | 36. 970   |
| 4. 80  | 15. 70 | 26. 110 | 37. 980   |
| 5. 60  | 16. 60 | 27. 120 | 38. 990   |
| 6. 50  | 17. 30 | 28. 150 | 39. 1,000 |
| 7. 40  | 18. 40 | 29. 310 | 40. 1,110 |
| 8. 20  | 19. 50 | 30. 410 | 41. 1,120 |
| 9. 40  | 20. 80 | 31. 520 | 42. 3,230 |
| 10. 30 | 21. 90 | 32. 620 | 43. 5,490 |
| 11. 60 | 22. 20 | 33. 630 | 44. 7,890 |

#### Side B

- |        |        |         |           |
|--------|--------|---------|-----------|
| 1. 10  | 12. 40 | 23. 80  | 34. 540   |
| 2. 20  | 13. 90 | 24. 90  | 35. 570   |
| 3. 30  | 14. 80 | 25. 100 | 36. 970   |
| 4. 70  | 15. 80 | 26. 110 | 37. 980   |
| 5. 70  | 16. 70 | 27. 120 | 38. 990   |
| 6. 60  | 17. 20 | 28. 160 | 39. 1,000 |
| 7. 50  | 18. 30 | 29. 210 | 40. 1,110 |
| 8. 20  | 19. 40 | 30. 310 | 41. 1,120 |
| 9. 30  | 20. 80 | 31. 420 | 42. 2,340 |
| 10. 20 | 21. 90 | 32. 520 | 43. 4,580 |
| 11. 50 | 22. 50 | 33. 530 | 44. 8,790 |

**Problem Set**

1.
  - a. A: 704; 500, 300, 800  
700; 500, 200, 700  
697; 400, 200, 600  
B: 517; 400, 200, 600  
504; 400, 100, 500  
496; 300, 100, 400  
C: 810; 700, 200, 900  
805; 600, 200, 800  
793; 600, 100, 700
  - b. Explanations will vary; both addends are close to the halfway point, so they balance each other out.
2.
  - a. Estimates will vary.
  - b. 245 min
  - c. Explanations will vary; a different way of rounding is shown and compared.
3.
  - a. Estimates will vary.
  - b. 256 kilograms; a tape diagram is drawn and labeled to represent the problem.

**Exit Ticket**

- a. 420 minutes
- b. 400 minutes
- c. Explanations will vary; both addends are close to the halfway point, so rounding to the nearest 10 minutes and 100 minutes give estimates that are close to each other.

**Homework**

1.
  - a. 40 kg
  - b. 39 kg
  - c. 70 min
  - d. 61 min
  - e. A close estimate can help us see if our actual sum is reasonable.
2.
  - a. Estimates will vary.
  - b. Estimates will vary.
  - c. 573 min; explanations will vary.

## Lesson 18

### Problem Set

- 36 mL
  - 336 mL
  - 136 mL
  - 497 cm
  - 361 cm
  - 498 cm
  - 177 g
  - 73 g
  - 75 g
  - 1 km 315 m
  - 2 kg 31 g
- 172 g; tape diagram drawn and labeled to model problem
- 95 min
  - 50 min
- 34 cm

### Exit Ticket

- 235 mL
  - 304 m
  - 125 kg
- 221 cm



**Homework**

1.
  - a. 24 L
  - b. 324 L
  - c. 224 L
  - d. 575 cm
  - e. 334 cm
  - f. 365 cm
  - g. 681 g
  - h. 261 g
  - i. 306 km
  - j. 192 km
2. 174 g; tape diagram drawn and labeled to model problem
3.
  - a. 158 min
  - b. 19 min

## Lesson 19

### Problem Set

- 280 cm
  - 80 cm
  - 365 g
  - 254 g
  - 648 mL
  - 248 mL
  - 4 km 233 m
  - 2 L 51 mL
- 149 km
  - 8 kg
  - 235 L

### Exit Ticket

- 159 m
  - 108 kg
- 78 kg

### Homework

- 190 g
  - 166 g
  - 287 cm
  - 321 cm
  - 842 g
  - 542 g
  - 2 L 20 mL
  - 4 L 452 mL
- 75 kg; tape diagram drawn and labeled to model problem
- 188 kg
- 415 L

## Lesson 20

### Sprint

#### Side A

- |          |           |           |            |
|----------|-----------|-----------|------------|
| 1. 200   | 12. 900   | 23. 400   | 34. 1,000  |
| 2. 300   | 13. 1,900 | 24. 1,400 | 35. 1,000  |
| 3. 400   | 14. 2,900 | 25. 500   | 36. 1,000  |
| 4. 800   | 15. 3,900 | 26. 5,500 | 37. 10,000 |
| 5. 1,800 | 16. 7,900 | 27. 900   | 38. 7,000  |
| 6. 2,800 | 17. 500   | 28. 6,900 | 39. 4,100  |
| 7. 3,800 | 18. 2,500 | 29. 600   | 40. 8,400  |
| 8. 7,800 | 19. 400   | 30. 700   | 41. 3,600  |
| 9. 300   | 20. 3,400 | 31. 700   | 42. 9,800  |
| 10. 400  | 21. 700   | 32. 800   | 43. 2,900  |
| 11. 500  | 22. 4,700 | 33. 900   | 44. 10,000 |

#### Side B

- |          |           |           |            |
|----------|-----------|-----------|------------|
| 1. 100   | 12. 800   | 23. 300   | 34. 1,000  |
| 2. 200   | 13. 1,800 | 24. 1,300 | 35. 1,000  |
| 3. 300   | 14. 2,800 | 25. 400   | 36. 1,000  |
| 4. 700   | 15. 3,800 | 26. 5,400 | 37. 10,000 |
| 5. 1,700 | 16. 8,800 | 27. 800   | 38. 4,000  |
| 6. 2,700 | 17. 400   | 28. 6,800 | 39. 2,100  |
| 7. 3,700 | 18. 2,400 | 29. 600   | 40. 7,400  |
| 8. 8,700 | 19. 500   | 30. 700   | 41. 4,600  |
| 9. 200   | 20. 3,500 | 31. 700   | 42. 8,800  |
| 10. 300  | 21. 900   | 32. 800   | 43. 3,900  |
| 11. 400  | 22. 4,900 | 33. 900   | 44. 10,000 |

**Problem Set**

- A: 295; 400, 200, 200  
298; 500, 200, 300  
299; 400, 100, 300  
302; 500, 100, 400  
B: 486; 700, 300, 400  
495; 800, 300, 500  
498; 700, 200, 500  
508; 800, 200, 600
  - Explanations will vary; in the differences that gave the most precise estimates both numbers either rounded down or both numbers rounded up.
- Estimates will vary.
  - 188 L; tape diagram drawn and labeled to model problem
- Estimates and explanations will vary.
  - 128 g; tape diagram drawn and labeled to model problem

**Exit Ticket**

- Estimates will vary.
- Estimates will vary.
- 53 g
- Estimates and explanations will vary.

**Homework**

- 30 km
  - 28 km
  - Yes; it is a reasonable answer because our estimate is very close to our actual answer.  
A close estimate can help us see if our actual sum is reasonable.
- Estimates will vary.
  - 209 centimeters; explanations will vary.
- Estimates will vary.
  - 648 g
- Estimates will vary.
  - Estimates will vary.
  - 254 liters of water; estimates and explanations will vary.

## Lesson 21

### Problem Set

- 91 g, 58 g, 90 g, 60 g, 150 g;  
91 g, 58 g, 149 g
  - 91g, 58 g, 90 g, 60 g, 30 g;  
91 g, 58 g, 33 g
  - Because both estimates are close to the actual answers
- Yarn A: 64; 60  
Yarn B: 88; 90  
Yarn C: 38; 40
  - Estimate: 100 cm; actual: 102 cm
  - Estimate: 10 cm; actual: 14 cm;  
tape diagram is drawn and labeled
- Capacity of the 3 containers plotted and labeled on number lines  
Container D: 212 mL  $\approx$  210 mL  
Container E: 238 mL  $\approx$  240 mL  
Container F: 195 mL  $\approx$  200 mL
  - Estimate: 650 mL; actual: 645 mL
  - Estimate: 30 mL; actual: 26 mL;  
tape diagram drawn and labeled
- 21 min
  - Estimate will vary; actual: 94 min
  - Because the estimate is close to the actual answer

### Exit Ticket

- Estimations will vary; 714 mL
- Estimations will vary; 123 mL

### Homework

- Estimations will vary; 612 mL
  - Estimations will vary; 306 mL
  - Answers and explanations will vary.
- Estimations will vary; 886 L
  - Estimations will vary; 148 L
- 26 min
  - Estimations will vary; 11 min
- Estimations will vary; 769 cm
  - Estimations will vary; 312 cm;  
tape diagram drawn and labeled