Answer Key

GRADE 5 • MODULE 6

Problem Solving with the Coordinate Plane

Lesson 1

Problem Set

1. a. 3
   b. 2 thirds
   c. 7 thirds or $2\frac{1}{3}$
   d. 14 thirds or $4\frac{2}{3}$
2. a. Second tick mark from left
   b. Fifth tick mark from left
   c. First tick mark from right
   d. 4 tick marks vertically from S
3. a. 3 tick marks from the right
   b. 7 tick marks from the right
   c. $5\frac{3}{4}$
   d. $3\frac{1}{4}$
   e. 5
   f. 2.5
4. Lenox is correct. Any orientation is acceptable
5. No. Explanations will vary.

Exit Ticket

1. a. 6 tick marks from the right
   b. $\frac{1}{5}$
   c. $\frac{3}{5}$

Homework

1. a. 3
   b. 8
   c. 14
   d. 11
2. 10 tick marks from the left
   11 tick marks from the left
   3 tick marks from the right
   1 tick mark from the right
3. a. Second tick mark left of 0
   b. 7 tick marks left of 0
   c. $11\frac{1}{2}$
   d. $\frac{1}{2}$
   e. 9
   f. 5
4. Explanations will vary.

Lesson 2

Problem Set

1. a. Answers will vary.
   b. Answers will vary.
2. a. Triangle, circle, square, octagon
   b. Triangle
   c. Parallelogram
   d. Diamond
3. a. 2, 1; 2, $3\frac{3}{4}$; 0, $3\frac{3}{4}$; $3\frac{3}{4}$, 0)
   b. Star
   c. Shapes plotted correctly.
4. Explanations will vary.

Exit Ticket

1. $\frac{1}{2}$, $4\frac{1}{2}$; $1\frac{1}{2}$, 2; 4, $4\frac{1}{2}$
2. Shapes plotted correctly.

Homework

1. a. Answers will vary.
   b. Answers may vary.
2. a. Circle; diamond; triangle; heart
   b. Star
   c. Square
3. a. $2\frac{1}{2}$, 4; 4, 3; 1, 2; 0, $4\frac{1}{2}$; $3\frac{1}{2}$, $5\frac{1}{2}$
   b. Heart and star
   c. X plotted correctly
   d. Square plotted correctly
   e. Triangle plotted correctly
4. Explanations will vary.

Lesson 3

Problem Set

1. Constructions match directions.
2. a. J, I, H, D
   b. F, E, H, K
   c. G $(2\frac{2}{3}, 3\frac{1}{3})$
   d. K
   e. M
   f. K $(5\frac{1}{3}, 2\frac{2}{3})$, I $(3\frac{1}{3}, 1\frac{2}{3})$, B $(5\frac{2}{3}, 0)$, C $(0, 5\frac{1}{3})$
   g. M, F, A, N
   h. L
   i. (0 , 0), origin
   j. Points marked at given coordinate pairs
   k. $\frac{8}{3}$ or $2\frac{2}{3}$
   l. $\frac{7}{3}$ or $2\frac{1}{3}$
   m. Less than
   n. Explanations will vary.

Exit Ticket

1. Constructions and point placement(s) match directions.

Homework

1. Constructions match given parameters
2. a. R, M, Q
   b. O, M, L
   c. Q
   d. K
   e. R
   f. T $(2\frac{3}{5}, 2\frac{4}{5})$, U $(\frac{3}{5}, \frac{3}{5})$, S $(1, \frac{2}{5})$, K $(1\frac{1}{5}, 3\frac{2}{5})$
   g. U, X, L, W
   h. Point with equal x and y coordinates plotted
   i. Origin, (0 , 0)
   j. Points plotted correctly
   k. $\frac{4}{5}$
   l. 1
   m. Equal to
   n. Explanations will vary.

Lesson 4

Problem Set

1. Students play Battleship.

Exit Ticket

1. a. Answers will vary.
   b. Above (2, 3), below (2, 1)

Homework

1. Answers will vary.
2. Explanations will vary.
3. Explanations will vary.

Lesson 5

Problem Set

1. a. Line E drawn and labeled
   b. x, y
   c. Answers will vary.
   d. (3, 4); (11, 4); answers will vary.
   e. Answers will vary.
   f. Answers will vary.
2. Points plotted correctly
   a. Line drawn and labeled
   b. $1\frac{1}{2}$
   c. Perpendicular; parallel
   d. Answers will vary.
3. (b) circled; explanations will vary.
4. (c) circled; answers will vary.
5. a. x-values are all $5\frac{1}{2}$; y-values will vary.
   b. x-values are all $5\frac{1}{2}$; y-values will vary.
   c. x-values are all $5\frac{1}{2}$; y-values will vary.
6. a. y-values are all 0; x-values will vary.
   b. y-values are all 0; x-values will vary.
   c. y-values are all 0; x-values will vary.
7. Answers and explanations will vary.

Exit Ticket

1. Answers will vary.
2. y-axis; x-axis
3. Answers will vary.
4. A (4, 6); B (4, 3); points C and D will vary.
5. Answers will vary.

Homework

1. a. Line *g* drawn and labeled
   b. x-axis, y-axis
   c. Answers will vary.
   d. A (4, 8); B (9, 8); points C and D will vary.
   e. y-value
   f. Answers will vary.
2. Points plotted correctly
   a. Line *f* drawn and labeled
   b. $\frac{3}{4}$
   c. perpendicular, parallel
   d. Answers will vary.
3. (a) circled; explanations will vary.
4. (b) circled; answers will vary.
5. Answers will vary.
6. Answers will vary.
7. Answers will vary.

Lesson 6

Problem Set

1. Points plotted and labeled correctly
   a. Lines drawn through given points
   b. CD
   c. AB
   d. Answers will vary.
   e. Answers will vary.
2. a. $3\frac{1}{2}$
   b. $(\frac{1}{2}, 3\frac{1}{2})$
   c. Appropriate section shaded
   d. $4\frac{1}{2}$
   e. $(4\frac{1}{2}, 5)$
   f. Appropriate section shaded
3. Tasks completed on plane

Exit Ticket

1. Answers will vary.
2. Answers will vary.
3. Answers will vary.
4. Answers will vary.
5. Answers will vary.
6. Answers will vary.
7. Answers will vary.
8. Answers will vary.

Homework

1. Points plotted and labeled correctly.
   a. Lines drawn through given points
   b. $\overline{ST}$
   c. $\overline{CA}$
   d. Answers will vary.
   e. Answers will vary.
2. a. $1\frac{1}{2}$
   b. $(2, 1\frac{1}{2})$
   c. Appropriate section shaded
   d. $5\frac{1}{2}$
   e. $(5\frac{1}{2}, 3\frac{1}{2})$
   f. Appropriate section shaded
3. (a–d) Lines constructed and labeled on plane
4. (a–c) Tasks completed on plane

Lesson 7

Problem Set

1. (2, 3); (4, 5); (6, 7)
   a. Line drawn correctly
   b. Answers will vary.
   c. Answers will vary.
2. $(\frac{1}{2}, 1)$, (1, 2), $(1\frac{1}{2}, 3)$, (2, 4)
   a. Line drawn correctly
   b. Answers will vary.
   c. Answers will vary.
3. a. Answers may vary.
   b. Answers may vary.
   c. *Y*-coordinates are the same
   d. 6; 0; 30; 30; 36
   e. 5
   f. $d, c \text{ or } e, b, d, e$

Exit Ticket

(0, 4); (2, 6); (3, 7); (7, 11)

1. Line drawn correctly
2. Answers will vary.
3. Answers may vary.

Homework

1. (2, 0); $(3\frac{1}{2}, 1\frac{1}{2})$; $(4\frac{1}{2}, 2\frac{1}{2})$; (6, 4)
   a. Line drawn correctly
   b. Answers will vary.
   c. Answers may vary.
2. (0, 0); $(\frac{1}{4}, \frac{3}{4})$; $(\frac{1}{2}, 1\frac{1}{2})$; (1, 3)
   a. Line drawn correctly
   b. Answers will vary.
   c. Answers will vary.
3. a. 10
   b. Answers may vary.
   c. Answers will vary.
   d. Answers will vary.
   e. $y = \frac{x}{2}$
   f. $m; n; \ell; q$

Lesson 8

Sprint

Side A

1.	623	12.	300	23.	4,100	34.	91.9
2.	6,230	13.	0.2	24.	7,600	35.	1,820
3.	62,300	14.	2	25.	10	36.	14,700
4.	736	15.	20	26.	70	37.	202.1
5.	7,360	16.	0.08	27.	7.2	38.	1,721
6.	73,600	17.	0.8	28.	8.02	39.	64
7.	6	18.	8	29.	19	40.	82
8.	0.6	19.	3.2	30.	7,412	41.	96
9.	0.06	20.	6.7	31.	680	42.	39
10.	3	21.	91	32.	49.01	43.	124.8
11.	30	22.	74	33.	1,607	44.	564.8

Side B

1.	461	12.	900	23.	5,200	34.	81.8
2.	4,610	13.	0.4	24.	8,700	35.	2,930
3.	46,100	14.	4	25.	10	36.	25,800
4.	892	15.	40	26.	80	37.	303.2
5.	8,920	16.	0.07	27.	0.83	38.	2,831
6.	89,200	17.	0.7	28.	9.03	39.	42
7.	3	18.	7	29.	17	40.	66
8.	0.3	19.	4.5	30.	8,523	41.	93
9.	0.03	20.	7.8	31.	790	42.	36
10.	9	21.	28	32.	58.02	43.	84.4
11.	90	22.	19	33.	2,708	44.	524.4

Problem Set

1. Answers will vary.
   a. Points accurately plotted
   b. Accurate line drawn
   c. Answers will vary.
2. Answers will vary.
   a. Points accurately plotted
   b. Accurate line drawn
   c. Answers will vary.
3. Answers will vary.
   a. Points accurately plotted
   b. Accurate line drawn
   c. Answers will vary.
4. a. Answers will vary.
   b. Lines m and n; (0, 1)
   c. Lines m and ℓ
   d. Answers will vary.

Exit Ticket

5, (0, 5); 9, (2, 9); 12, (3.5, 12)

a. Points accurately plotted
b. Accurate line drawn
c. Answers will vary.

Homework

1. Answers will vary.
   a. Points accurately plotted
   b. Accurate line drawn
   c. Answers will vary.
2. Answers will vary.
   a. Points accurately plotted.
   b. Accurate line drawn
   c. Answers will vary.
3. Coordinates will vary.
   a. Accurate lines drawn
   b. Lines n and ℓ; (1, 1)
   c. Lines ℓ and m
   d. Answers will vary.

Lesson 9

Problem Set

1. a: 2, (1,2); 6, (5,6); 10, (9,10); 14, (13,14)
   b: 4, (0,4); 9, (5,9); 12, (8,12); 15, (11,15)
   a. Accurate lines drawn
   b. Answers will vary.
   c. Answers will vary.

2. e: 0, (0,0); 4, (2,4); 10, (5,10); 18, (9,18)
   f: 0, (0,0); 3, (6,3); 5, (10,5); 10, (20,10)
   a. Accurate lines drawn
   b. Answers will vary.
   c. Answers will vary.

Exit Ticket

ℓ: 5, (0, 5); 6, (1, 6); 2, (2, 7); 9, (4, 9)
m: 0, (0,0); 5, (1,5); 10, (2,10); 20, (4,20)

Homework

1. a: 0, (1, 0); 3, (4, 3); 8, (9, 8); 15, (16, 15)
   b: 0, (5, 0); 3, (8, 3); 9, (14, 9); 15, (20, 15)
   a. Accurate lines drawn
   b. Answers will vary.
   c. Answers will vary.

2. e: 0, (0,0); 3, (1,3); 12, (4,12); 18, (6,18)
   f: 0, (0,0); 3, (1, (3, 1); 3, (9,3); 5, (15,5)
   a. Accurate lines drawn
   b. Answers will vary.
   c. Answers will vary.

Lesson 10

Problem Set

1. a. Answer provided.
   b. Accurate line drawn.
   c. Answers will vary.
   d. Answers will vary.
   e. Accurate line drawn.
   f. Answers will vary.
   g. Answers will vary.
   h. Answers will vary.
2. Answers will vary.
3. a. Answer provided.
   b. Accurate line drawn.
   c. Answers will vary.
   d. Answers will vary.
   e. Accurate line drawn.
   f. Answers will vary.
   g. Answers will vary.
   h. Answers will vary.
   i. Answers will vary.
4. *Add 5 to* x and x *plus* $\frac{1}{2}$ circled.

Exit Ticket

a. Answer provided.
b. Accurate line drawn.
c. Answers will vary.
d. Answers will vary.

Homework

1. a. Answer provided.
   b. Accurate line drawn.
   c. Answers will vary.
   d. Answers will vary.
   e. Accurate line drawn.
   f. Answers will vary.
   g. Answers will vary.
   h. Answers will vary.
2. Answers will vary.
3. a. Use $y = x$
   b. Accurate line drawn.
   c. Answers will vary.
   d. Answers will vary (e.g., y is x doubled).
   e. Accurate line drawn.
   f. Answers will vary.
   g. Answers will vary (e.g., y is half of x).
   h. Answers will vary.
   i. Answers will vary.

Lesson 11

Sprint

Side A

1.	3	12.	9	23.	13	34.	50
2.	3	13.	10	24.	17	35.	3
3.	3	14.	20	25.	17	36.	17
4.	3	15.	30	26.	12	37.	12
5.	4	16.	90	27.	11	38.	5
6.	4	17.	2	28.	13	39.	13
7.	4	18.	2	29.	14	40.	60
8.	14	19.	2	30.	16	41.	5
9.	13	20.	2	31.	15	42.	19
10.	14	21.	2	32.	6	43.	20
11.	8	22.	3	33.	8	44.	70

Side B

1.	4	12.	9	23.	14	34.	40
2.	4	13.	10	24.	18	35.	4
3.	4	14.	20	25.	18	36.	18
4.	4	15.	30	26.	13	37.	13
5.	5	16.	80	27.	12	38.	6
6.	5	17.	3	28.	14	39.	14
7.	5	18.	3	29.	15	40.	50
8.	15	19.	3	30.	17	41.	6
9.	14	20.	3	31.	16	42.	19
10.	15	21.	3	32.	7	43.	20
11.	8	22.	4	33.	9	44.	60

Problem Set

1. ℓ: 0, (0, 0); 2, (1, 2); 4, (2, 4); 6, (3, 6)

   m: 1, (0, 1); 3, (1, 3); 5, (2, 5); 7, (3, 7)

   a. Accurate lines drawn

   b. Answers will vary.

   c. Answers will vary.

2. $(2, 1\frac{2}{3})$ and $(1\frac{1}{2}, 1\frac{1}{2})$ circled

   a. Answers will vary.

   b. Answers will vary.

3. ℓ: 0, (0, 0); $\frac{1}{2}$, $(1, \frac{1}{2})$; 1, (2, 1); $1\frac{1}{2}$, $(3, 1\frac{1}{2})$

   m: $1\frac{1}{2}$, $(0, 1\frac{1}{2})$; 2, (1, 2); $2\frac{1}{2}$, $(2, 2\frac{1}{2})$; 3, (3, 3)

   a. Accurate lines drawn

   b. Answers will vary.

   c. Answers will vary.

4. $(2, \frac{1}{3})$ and (3, 1) circled

   a. Answers will vary.

   b. Answers will vary.

Exit Ticket

1. ℓ: 0, (0, 0); 3, (1, 3); 6, (2, 6); 9, (3, 9)

   m: 1, (0, 1); 4, (1, 4); 7, (2, 7); 10, (3, 10)

   a. Accurate lines drawn

   b. Answers will vary.

2. $(1, 1\frac{1}{3})$ and $(2, 1\frac{2}{3})$ circled

Homework

1. ℓ: 2, (1, 2); 4, (2, 4); 6, (3, 6)

   m: 1, (1, 1); 3, (2, 3); 5, (3, 5)

   a. Accurate lines drawn

   b. Answers will vary.

   c. Answers will vary.

2. (2, 2) circled

   a. Answers will vary.

   b. Answers will vary.

3. ℓ: 1, (0, 1); $1\frac{1}{2}$, $(1, 1\frac{1}{2})$; 2, (2, 2); $2\frac{1}{2}$, $(3, 2\frac{1}{2})$

   m: $1\frac{1}{4}$, $(0, 1\frac{1}{4})$; $1\frac{3}{4}$, $(1, 1\frac{3}{4})$; $2\frac{1}{4}$, $(2, 2\frac{1}{4})$; $2\frac{3}{4}$, $(3, 2\frac{3}{4})$

   a. Accurate lines drawn

   b. Answers will vary.

   c. Answers will vary.

4. $(1, \frac{1}{4})$ and $(3, 1\frac{3}{4})$ circled

   a. Answers will vary.

   b. Answers will vary.

Lesson 12

Sprint

Side A

1.	4	12.	8.139	23.	7.983	34.	6.122
2.	4.9	13.	0.04	24.	7.981	35.	9.342
3.	4.93	14.	0.047	25.	2.6	36.	8.047
4.	4.932	15.	1.047	26.	2.685	37.	9.107
5.	3.932	16.	1.847	27.	2.285	38.	6.87
6.	1.932	17.	1.837	28.	4.513	39.	4.548
7.	0.4	18.	1.817	29.	3.57	40.	6.348
8.	0.43	19.	0.004	30.	3.576	41.	6.528
9.	0.439	20.	7.004	31.	3.536	42.	6.546
10.	8.439	21.	7.904	32.	7.942	43.	6.136
11.	8.339	22.	7.984	33.	6.125	44.	9.513

Side B

1.	5	12.	8.239	23.	7.984	34.	7.123
2.	5.9	13.	0.05	24.	7.982	35.	1.453
3.	5.93	14.	0.057	25.	3.6	36.	8.057
4.	5.932	15.	1.057	26.	3.685	37.	1.207
5.	4.932	16.	1.857	27.	3.285	38.	7.98
6.	2.932	17.	1.847	28.	5.524	39.	5.548
7.	0.5	18.	1.827	29.	4.57	40.	7.348
8.	0.53	19.	0.005	30.	4.576	41.	7.528
9.	0.539	20.	7.005	31.	4.536	42.	7.546
10.	8.539	21.	7.905	32.	6.143	43.	7.137
11.	8.439	22.	7.985	33.	7.126	44.	1.623

Problem Set

1. a. Answers will vary.
   b. Answers will vary.
2. a. Answers will vary.
   b. Answers will vary.
3. a. Answers will vary.
   b. Answers will vary.
   c. Answers will vary.
   d. Answers will vary.
   e. Answers will vary.
4. Answers will vary.
5. a. Answers will vary.
   b. Answers will vary.

Exit Ticket

a. Answers will vary.

b. Answers will vary.

Homework

1. a. Answers will vary.
   b. Answers will vary.
2. a. Answers will vary.
   b. Answers will vary.
3. a. Answers will vary.
   b. Answers will vary.
   c. Answers will vary.
   d. Answers will vary.
   e. Answers will vary.
4. Answers will vary.

Lesson 13

Problem Set

1. 4 sets of parallel lines drawn
2. Five sets of parallel segments circled
3. a. Parallel segment drawn through point S
   b. Parallel segment drawn through point T
   c. Parallel segment drawn through point U
   d. Parallel segment drawn through point V
   e. Parallel segment drawn through point W
   f. Parallel segment drawn through point Z
4. Parallel lines drawn

Exit Ticket

a. Parallel segment drawn through point H
b. Parallel segment drawn through point I
c. Parallel segment drawn through point J

Homework

1. 4 sets of parallel lines drawn
2. Five sets of parallel segments circled
3. a. Parallel segment drawn through point S
   b. Parallel segment drawn through point T
   c. Parallel segment drawn through point U
   d. Parallel segment drawn through point V
   e. Parallel segment drawn through point W
   f. Parallel segment drawn through point Z
4. Parallel lines drawn

Lesson 14

Problem Set

1. a. (6, 4); (11, 6)
   b. Accurate $\overleftrightarrow{PR}$ drawn
   c. Accurate coordinate pairs plotted
   d. Accurate $\overleftrightarrow{ST}$ drawn
   e. $\overleftrightarrow{PR} \parallel \overleftrightarrow{ST}$ circled
   f. Answers will vary.
   g. Accurate $\overleftrightarrow{UV}$ drawn

2. a. (1, $3\frac{1}{2}$ or 3.5); (3, $1\frac{1}{2}$ or 1.5)
   b. Accurate $\overleftrightarrow{EF}$ drawn
   c. Answers will vary.
   d. Accurate $\overleftrightarrow{LM}$ drawn
   e. Explanations will vary.
   f. Answers will vary.
   g. Explanations will vary.

Exit Ticket

a. (2, 4); (5, 3).
b. Accurate $\overleftrightarrow{EF}$ drawn
c. Answers will vary.
d. Accurate $\overleftrightarrow{LM}$ drawn

Homework

1. a. (6, 4); (3, 6)
   b. Accurate $\overleftrightarrow{MN}$ drawn
   c. Accurate coordinate pairs plotted
   d. Accurate $\overleftrightarrow{JK}$ drawn
   e. $\overleftrightarrow{MN} \parallel \overleftrightarrow{JK}$ circled
   f. Answers will vary.
   g. Accurate $\overleftrightarrow{FG}$ drawn

2. a. (4, $3\frac{1}{2}$ or 3.5); (2, 3)
   b. Accurate $\overleftrightarrow{AB}$ drawn
   c. Answers will vary.
   d. Accurate $\overleftrightarrow{CD}$ drawn
   e. Explanations will vary.
   f. Answers will vary.
   g. Explanations will vary.

Lesson 15

Problem Set

1. 4 pairs circled
2. Perpendicular lines drawn
3. a. Perpendicular segment drawn
   b. Perpendicular segment drawn
   c. Perpendicular segment drawn
   d. Perpendicular segment drawn
4. Perpendicular lines drawn.

Exit Ticket

a. Perpendicular segment drawn
b. Perpendicular segment drawn
c. Perpendicular segment drawn
d. Perpendicular segment drawn

Homework

1. 4 pairs circled
2. Perpendicular lines drawn
3. a. Perpendicular segment drawn
   b. Perpendicular segment drawn
   c. Perpendicular segment drawn
   d. Perpendicular segment drawn
4. Perpendicular lines drawn

Lesson 16

Problem Set

1. a. $\overline{AB}$ drawn
   b. Point C plotted
   c. $\overline{AC}$ drawn
   d. Explanations will vary.
   e. Explanations will vary.

2. a. $\overline{QT}$ drawn
   b. Point R plotted
   c. $\overline{QR}$ drawn
   d. Explanations will vary.
   e. x-coordinates: $2\frac{1}{2}$; y-coordinates: $1\frac{1}{2}$
   f. x-coordinates: $1\frac{1}{2}$; y-coordinates: $2\frac{1}{2}$
   g. Explanations will vary.

3. Answers will vary.

Exit Ticket

a. $\overline{UV}$ drawn
b. Point W plotted
c. $\overline{VW}$ drawn
d. Explanations will vary.

Homework

1. a. $\overline{PQ}$ drawn
   b. Point R plotted
   c. $\overline{PR}$ drawn
   d. Explanations will vary.
   e. x-coordinates: 4; y-coordinates: 1
   f. x-coordinates: 1; y-coordinates: 4
   g. Explanations will vary.

2. a. $\overline{BC}$ drawn
   b. Point D plotted
   c. $\overline{BD}$ drawn
   d. Explanations will vary.
   e. x-coordinates: $1\frac{1}{2}$; y-coordinates: 1
   f. x-coordinates: 1; y-coordinates: $1\frac{1}{2}$
   g. Explanations will vary.

3. Answers will vary.

Lesson 17

Problem Set

1. Symmetric figure drawn
2. Symmetric figure drawn
3. a. Answers will vary.
   b. $\overline{DE}$, $\overline{EF}$, $\overleftrightarrow{DF}$ drawn
   c. Answers will vary.
4. Explanations will vary.

Exit Ticket

1. Answers will vary.
2. Answers will vary.

Homework

1. Symmetric figure drawn
2. Symmetric figure drawn
3. a. Answers will vary.
   b. Accurate $\overline{DE}$, $\overline{EF}$, and $\overleftrightarrow{DF}$ drawn
   c. Answers will vary.
4. Explanations will vary.

Lesson 18

Problem Set

1. a. Line drawn
   b. Points plotted; line segments drawn
   c. Symmetric figure drawn;
   (0.1, 0.9); (0.2, 1.1); (0.3, 0.9); (0.5, 1.3); (0.6, 1.2); (0.8, 1.2); (0.9, 1.3); (1.1, 0.9); (1.2, 1.1); (1.3, 0.9)
   d. Answers will vary.
   e. Answers will vary.

2. Vertical line drawn; x is always 0.7

3. a. Line drawn.
   b. Figures will vary.
   c. Accurate coordinates recorded.
   d. Answers will vary.
   e. Chart completed
   f. Answers will vary.

Exit Ticket

No; answers will vary.

Homework

1. a. Line drawn
   b. Points plotted; figure drawn
   c. Symmetric figure drawn;
   (9, 13); (9, 12); (8, 10); (6, 9); (6, 3); (9, 2); (5, 2)
   d. Answers will vary.
   e. Answers will vary.

2. a. Line drawn
   b. Points plotted; figure drawn
   c. Symmetric figure drawn;
   $(\frac{1}{2}, \frac{1}{2})$; (2, 1); $(1\frac{1}{2}, 1\frac{1}{2})$; (4, 2); $(3\frac{1}{2}, 3\frac{1}{2})$; $(4\frac{1}{2}, 4)$; (5, 5)
   d. Answers will vary.
   e. Answers will vary.

Lesson 19

Sprint *(Note: Answers are given in unit form for ease of reading, but students may answer in standard form.)*

Side A

1.	1 half	12.	1 fourth	23.	1 third	34.	5 sixths
2.	1 third	13.	2 thirds	24.	1 seventh	35.	4 fifths
3.	1 fourth	14.	1 half	25.	2 thirds	36.	4 fifths
4.	1 half	15.	1 third	26.	1 half	37.	4 fifths
5.	1 third	16.	1 fifth	27.	1 third	38.	2 thirds
6.	1 fourth	17.	2 thirds	28.	1 eighth	39.	3 fourths
7.	1 half	18.	1 half	29.	2 thirds	40.	4 fifths
8.	1 third	19.	1 third	30.	3 fourths	41.	5 sixths
9.	1 fourth	20.	1 sixth	31.	3 fourths	42.	2 thirds
10.	1 half	21.	2 thirds	32.	3 fourths	43.	5 sixths
11.	1 third	22.	1 half	33.	5 sixths	44.	4 fifths

Side B

1.	1 half	12.	1 fourth	23.	1 third	34.	4 fifths
2.	1 third	13.	2 thirds	24.	1 seventh	35.	4 fifths
3.	1 fourth	14.	1 half	25.	2 thirds	36.	5 sixths
4.	1 half	15.	1 third	26.	1 half	37.	5 sixths
5.	1 third	16.	1 fifth	27.	1 third	38.	2 thirds
6.	1 fourth	17.	2 thirds	28.	1 eighth	39.	3 fourths
7.	1 half	18.	1 half	29.	2 thirds	40.	4 fifths
8.	1 third	19.	1 third	30.	3 fourths	41.	5 sixths
9.	1 fourth	20.	1 sixth	31.	3 fourths	42.	2 thirds
10.	1 half	21.	2 thirds	32.	3 fourths	43.	4 fifths
11.	1 third	22.	1 half	33.	4 fifths	44.	5 sixths

Problem Set

1. a. $2\frac{1}{4}$ inches
   b. 2:30–3:00; answers will vary.
   c. 4:30–5:00; answers will vary.
   d. Answers will vary.
   e. 9 inches

2. a. January
   b. July; answers will vary.
   c. May; answers will vary.
   d. 35.5 gallons
   e. $188.51

Exit Ticket

a. 4 feet
b. Week 2
c. Weeks 1 and 2; answers will vary.
d. Answers will vary.

Homework

1. a. $1,250
   b. ~$875
   c. Answers will vary.
   d. May 16; answers will vary.
   e. May 18; answers will vary.

2. a. 1 hour 50 minutes
   b. 5 km
   c. ~1:15–1:17 and ~2:14–2:20; answers will vary.
   d. Swimming portion; answers will vary.
   e. Biking portion; line is steepest at bike race

Lesson 20

Sprint *(Note: Answers are given in unit form for ease of reading, but students may write answers in standard form.)*

Side A

1. 3 and 1 half
2. 2 and 1 half
3. 1 and 1 half
4. 1 half
5. 2 thirds
6. 1 and 2 thirds
7. 3 and 2 thirds
8. 3 and 1 third
9. 1 and 1 third
10. 1 and 3 fourths
11. 1 and 1 fourth
12. 2 and 1 fourth
13. 2 and 3 fourths
14. 3 and 1 fourth
15. 1 and 9 tenths
16. 2 and 1 tenth
17. 1 and 3 tenths
18. 3 and 7 tenths
19. 2 and 4 fifths
20. 2 and 3 fifths
21. 2 and 1 fifth
22. 2 and 2 fifths
23. 2 and 7 eighths
24. 2 and 5 eighths
25. 2 and 3 eighths
26. 2 and 1 eighth
27. 1 and 1 eighth
28. 3 and 6 sevenths
29. 2 and 1 seventh
30. 1 and 4 sevenths
31. 3 and 3 sevenths
32. 2 and 2 sevenths
33. 3 and 1 fourth
34. 1 and 3 eighths
35. 2 and 7 tenths
36. 3 and 3 fifths
37. 3 and 4 sevenths
38. 2 and 3 tenths
39. 2 and 1 half
40. 3 and 3 fourths
41. 1 and 1 fourth
42. 3 and 5 sixths
43. 2 and 2 thirds
44. 1 and 1 third

Side B

1. 1 half
2. 1 and 1 half
3. 2 and 1 half
4. 3 and 1 half
5. 3 fourths
6. 1 and 3 fourths
7. 3 and 3 fourths
8. 3 and 1 fourth
9. 1 and 1 fourth
10. 1 and 2 thirds
11. 1 and 1 third
12. 2 and 1 third
13. 2 and 2 thirds
14. 3 and 1 third
15. 2 and 9 tenths
16. 1 and 1 tenth
17. 3 and 3 tenths
18. 2 and 7 tenths
19. 1 and 4 fifths
20. 1 and 3 fifths
21. 1 and 1 fifth
22. 2 and 2 fifths
23. 1 and 7 eighths
24. 1 and 5 eighths
25. 1 and 3 eighths
26. 1 and 1 eighth
27. 3 and 1 eighth
28. 2 and 6 sevenths
29. 1 and 1 seventh
30. 3 and 4 sevenths
31. 2 and 3 sevenths
32. 1 and 2 sevenths
33. 2 and 1 fourth
34. 3 and 3 eighths
35. 1 and 7 tenths
36. 2 and 3 fifths
37. 2 and 4 sevenths
38. 1 and 3 tenths
39. 1 and 1 half
40. 2 and 1 fourth
41. 3 and 3 fourths
42. 2 and 1 sixth
43. 1 and 1 third
44. 3 and 2 thirds

Problem Set

1. a. 10 lb
   b. 6 lb
   c. Week 9; Week 11; answers will vary.
   d. Answers will vary.

2. a. 12
   b. 2008–2009
   c. 2019

Exit Ticket

a. 8 dozen; answers will vary.
b. Saturday and Sunday; answers will vary.
c. Friday, Saturday, Sunday
d. 23 doz

Homework

a. 16 km; 5 hr
b. 9 a.m.; answers will vary.
c. Before; answers will vary.
d. 7 a.m.–8 a.m. and 10 a.m.–11 a.m.
e. 8 a.m.–9 a.m.; answers will vary.

Lesson 21

Problem Set

1. 13 in; 169 in^2; 84.5 in^2
2. Necklace: $85; scarf: $51; notebook: $8.50; $76.50
3. Both rooms green: $2,607.75; den green, dining room brown: $2,636.55
4. 16 miles
5. Pumpkins 7.5 lb; squash 2.5 lb
6. 75 trucks
7. $\frac{12}{19}$
8. 8 scoops
9. a. $47\frac{61}{64}$ in^2
   b. $143\frac{55}{64}$ in^2
   c. $\frac{1}{3}$

Homework

1. Sara: 148 miles; Eli: 74 miles; Ashley: 222 miles; Hazel: 444 miles
2. Answers will vary.

Lesson 22

Problem Set

See Lesson 21 Answer Key.

Homework

1. Answer provided.

   $9\ ft^2$

   $4\ ft^2$

   Answer provided.

   $1\ ft^2$

   Answer provided.

   $25\ ft^2$

   $16\ ft^2$

   $4\ ft^2$

   $9\ ft^2$

   $16\ ft^2$

2. Answers will vary.

Lesson 23

Sprint *(Note: Answers are shown here in unit form for ease of reading, but students may answer in standard form.)*

Side A

1.	6 fifths	12.	9 fourths	23.	27 tenths	34.	33 eighths
2.	11 fifths	13.	11 fourths	24.	49 tenths	35.	35 eighths
3.	16 fifths	14.	13 fourths	25.	9 eighths	36.	39 eighths
4.	21 fifths	15.	15 fourths	26.	11 sixths	37.	17 twelfths
5.	5 fourths	16.	13 thirds	27.	29 sixths	38.	19 twelfths
6.	7 fourths	17.	14 thirds	28.	37 eighths	39.	25 twelfths
7.	7 fifths	18.	13 fifths	29.	13 eighths	40.	37 twelfths
8.	8 fifths	19.	18 fifths	30.	19 eighths	41.	31 twelfths
9.	9 fifths	20.	23 fifths	31.	33 tenths	42.	41 twelfths
10.	14 fifths	21.	13 sixths	32.	47 tenths	43.	47 twelfths
11.	19 fifths	22.	25 eighths	33.	24 fifths	44.	55 twelfths

Side B

1.	3 halves	12.	7 thirds	23.	23 tenths	34.	23 eighths
2.	5 halves	13.	8 thirds	24.	31 tenths	35.	31 eighths
3.	7 halves	14.	10 thirds	25.	7 sixths	36.	25 sixths
4.	9 halves	15.	11 thirds	26.	11 eighths	37.	13 twelfths
5.	4 thirds	16.	17 fourths	27.	23 sixths	38.	23 twelfths
6.	5 thirds	17.	19 fourths	28.	29 eighths	39.	49 twelfths
7.	13 tenths	18.	12 fifths	29.	21 eighths	40.	29 twelfths
8.	17 tenths	19.	17 fifths	30.	15 eighths	41.	35 twelfths
9.	19 tenths	20.	22 fifths	31.	43 tenths	42.	43 twelfths
10.	29 tenths	21.	19 sixths	32.	37 tenths	43.	53 twelfths
11.	39 tenths	22.	17 eighths	33.	17 sixths	44.	59 twelfths

Problem Set

See Lesson 21 Answer Key.

Homework

1. P = 147 cm
2. Answers will vary.
3. Answers will vary.

Lesson 24

Problem Set

See Lesson 21 Answer Key.

Homework

1. 14 bags
2. Answers will vary. (*Hint: Think three-dimensionally.)*
3. Answers will vary.

Lesson 25

Problem Set

See Lesson 21 Answer Key.

Homework

1. Fred: 48 flowers; Ethyl: 84 flowers
2. Answers will vary.
3. Answers will vary

Lesson 26

Problem Set

1. a. Expressions will vary; $11\frac{2}{5}$
   b. Expressions will vary; $7\frac{2}{3}$
   c. Expressions will vary; $28\frac{4}{5}$
   d. Expressions will vary; 9
2. a. Expressions will vary; $5\frac{1}{3}$
   b. Expressions will vary; 6
3. a. $>$; explanations will vary.
   b. $>$; explanations will vary.
   c. $<$; explanations will vary.

Reflection

Answers will vary.

Homework

1. a. Expressions will vary; 4,000
   b. Expressions will vary; $87\frac{1}{2}$
   c. Expressions will vary; 5
   d. Expressions will vary; $\frac{5}{48}$
2. a. Expressions will vary; $4\frac{1}{5}$
   b. Expressions will vary; $5\frac{1}{3}$
3. a. $<$; explanations will vary.
   b. $=$; explanations will vary.
   c. $<$; explanations will vary.

Lesson 27

Problem Set

1. a. Model drawn; 15 minutes
   b. Model drawn; 24 marbles
2. Word problems will vary; 12
   Word problems will vary; 50
   Word problems will vary; $6\frac{1}{12}$

Reflection

1. Answers will vary.

Homework

1. a. Model drawn; 9 students
   b. Model drawn; 8 apples
2. Word problems will vary; 84
   Word problems will vary; $8\frac{2}{9}$
   Word problems will vary; 36

Lesson 28

Problem Set

Answers will vary.

Reflection

Answers will vary.

Homework

Answers will vary.

Lesson 29

Sprint *(Note: Answers are given here in unit form for ease of reading, but students may answer in standard form.)*

Side A

1.	6	12.	15 hundredths	23.	1 and 2 tenths	34.	21
2.	6 tenths	13.	14	24.	12 hundredths	35.	24 hundredths
3.	6 hundredths	14.	1 and 4 tenths	25.	12 thousandths	36.	24
4.	9	15.	14 hundredths	26.	12 thousandths	37.	4 and 2 tenths
5.	9 tenths	16.	12	27.	35	38.	49 hundredths
6.	9 hundredths	17.	1 and 2 tenths	28.	3 and 5 tenths	39.	48 thousandths
7.	8	18.	12 hundredths	29.	35 hundredths	40.	54 thousandths
8.	8 tenths	19.	12 hundredths	30.	35 thousandths	41.	4 and 8 tenths
9.	8 hundredths	20.	12 thousandths	31.	35 thousandths	42.	63 hundredths
10.	15	21.	12 thousandths	32.	16	43.	64 thousandths
11.	1 and 5 tenths	22.	12	33.	1 and 8 tenths	44.	72 thousandths

Side B

1.	8	12.	12 hundredths	23.	1 and 6 tenths	34.	24
2.	8 tenths	13.	18	24.	16 hundredths	35.	27 hundredths
3.	8 hundredths	14.	1 and 8 tenths	25.	16 thousandths	36.	32
4.	6	15.	18 hundredths	26.	16 thousandths	37.	4 and 2 tenths
5.	6 tenths	16.	15	27.	45	38.	36 hundredths
6.	6 hundredths	17.	1 and 5 tenths	28.	4 and 5 tenths	39.	48 thousandths
7.	9	18.	15 tenths	29.	45 hundredths	40.	54 thousandths
8.	9 tenths	19.	15 hundredths	30.	45 thousandths	41.	4 and 8 tenths
9.	9 hundredths	20.	15 thousandths	31.	45 thousandths	42.	63 hundredths
10.	12	21.	15 thousandths	32.	12	43.	49 thousandths
11.	1 and 2 tenths	22.	16	33.	1 and 4 tenths	44.	72 thousandths

Problem Set

Vocabulary definitions and terms are used to play Math Pictionary.

Reflection

Answers will vary.

Homework

1. a. Quadrilateral, trapezoid; answers will vary.
   b. Quadrilateral; answers will vary.
   c. Quadrilateral, trapezoid, parallelogram; answers will vary.
   d. Quadrilateral, trapezoid, parallelogram, rhombus, kite; answers will vary.

2. a. Figure drawn
   b. Quadrilateral, trapezoid, parallelogram, rhombus, kite; answers will vary.
   c. Quadrilateral, trapezoid, parallelogram, rhombus, kite; answers will vary.

Lesson 30

Problem Set

Game direction cards

Reflection

Answers will vary.

Homework

Answers will vary.

Lesson 31

Problem Set

Spiral drawn

Reflection

Answers will vary.

Homework

1. Spiral drawn
2. Answers will vary.
3. 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377

Lesson 32

Problem Set

1.

Week	Add	Total	Week	Add	Total
1	Answer provided	Answer provided	27	$27	$378
2	Answer provided	Answer provided	28	$28	$406
3	Answer provided	Answer provided	29	$29	$435
4	Answer provided	Answer provided	30	$30	$465
5	$5	$15	31	$31	$496
6	$6	$21	32	$32	$528
7	$7	$28	33	$33	$561
8	$8	$36	34	$34	$595
9	$9	$45	35	$35	$630
10	$10	$55	36	$36	$666
11	$11	$66	37	$37	$703
12	$12	$78	38	$38	$741
13	$13	$91	39	$39	$780
14	$14	$105	40	$40	$820
15	$15	$120	41	$41	$861
16	$16	$136	42	$42	$903
17	$17	$153	43	$43	$946
18	$18	$171	44	$44	$990
19	$19	$190	45	$45	$1,035
20	$20	$210	46	$46	$1,081
21	$21	$231	47	$47	$1,128
22	$22	$253	48	$48	$1,176
23	$23	$276	49	$49	$1,225
24	$24	$300	50	$50	$1,275
25	$25	$325	51	$51	$1,326
26	$26	$351	52	$52	$1,378

2.

Week	Add	Total	Week	Add	Total
1	Answer provided	Answer provided	27	$6.75	$94.50
2	Answer provided	Answer provided	28	$7.00	$101.50
3	Answer provided	Answer provided	29	$7.25	$108.75
4	Answer provided	Answer provided	30	$7.50	$116.25
5	$1.25	$3.75	31	$7.75	$124.00
6	$1.5	$5.25	32	$8.00	$132.00
7	$1.75	$7.00	33	$8.25	$140.25
8	$2.00	$9.00	34	$8.50	$148.75
9	$2.25	$11.25	35	$8.75	$157.50
10	$2.50	$13.75	36	$9.00	$166.50
11	$2.75	$16.50	37	$9.25	$175.75
12	$3.00	$19.50	38	$9.50	$185.25
13	$3.25	$22.75	39	$9.75	$195.00
14	$3.50	$26.25	40	$10.00	$205.00
15	$3.75	$30.00	41	$10.25	$215.25
16	$4.00	$34.00	42	$10.50	$225.75
17	$4.25	$38.25	43	$10.75	$236.50
18	$4.50	$42.75	44	$11.00	$247.50
19	$4.75	$47.50	45	$11.25	$258.75
20	$5.00	$52.50	46	$11.50	$270.25
21	$5.25	$57.75	47	$11.75	$282.00
22	$5.50	$63.25	48	$12.00	$294.00
23	$5.75	$69.00	49	$12.25	$306.25
24	$6.00	$75.00	50	$12.50	$318.75
25	$6.25	$81.25	51	$12.75	$331.50
26	$6.50	$87.75	52	$13.00	$344.50

3.

Week	Add	Total	Week	Add	Total
1	Answer provided	Answer provided	27	$196,418	$514,228
2	Answer provided	Answer provided	28	$317,811	$832,039
3	Answer provided	Answer provided	29	$514,229	$1,346,268
4	Answer provided	Answer provided	30	$832,040	$2,178,308
5	$5	$12	31	$1,346,269	$3,524,577
6	$8	$20	32	$2,178,309	$5,702,886
7	$13	$33	33	$3,524,578	$9,227,464
8	$21	$54	34	$5,702,887	$14,930,351
9	$34	$88	35	$9,227,465	$24,157,816
10	$55	$143	36	$14,930,352	$39,088,168
11	$89	$232	37	$24,157,817	$63,245,985
12	$144	$376	38	$39,088,169	$102,334,154
13	$233	$609	39	$63,245,986	$165,580,140
14	$377	$986	40	$102,334,155	$267,914,295
15	$610	$1,596	41	$165,580,141	$433,494,436
16	$987	$2,583	42	$267,914,296	$701,408,732
17	$1,597	$4,180	43	$433,494,437	$1,134,903,169
18	$2,584	$6,764	44	$701,408,733	$1,836,311,902
19	$4,181	$10,945	45	$1,134,903,170	$2,971,215,072
20	$6,765	$17,710	46	$1,836,311,903	$4,807,526,975
21	$10,946	$28,656	47	$2,971,215,073	$7,778,742,048
22	$17,711	$46,367	48	$4,807,526,976	$12,586,269,024
23	$28,657	$75,024	49	$7,778,742,049	$20,365,011,073
24	$46,368	$121,392	50	$12,586,269,025	$32,951,280,098
25	$75,025	$196,417	51	$20,365,011,074	$53,316,291,172
26	$121,393	$317,810	52	$32,951,280,099	$86,267,571,271

Reflection

Answers will vary.

Homework

1. 13; 21; 34; 55; 89; 144; 233; 377; 610; 987; 1,597; 2,584; 4,181; 6,765
2. Jonas was correct; examples will vary.
3. Answers will vary.

Lesson 33

Sprint

Side A

1.	1	12.	1000	23.	50	34.	325
2.	10	13.	2000	24.	5	35.	5
3.	20	14.	8000	25.	0.5	36.	5
4.	70	15.	10	26.	0.8	37.	50
5.	10	16.	100	27.	400	38.	90
6.	100	17.	200	28.	4000	39.	400
7.	200	18.	900	29.	4700	40.	80
8.	600	19.	500	30.	5900	41.	70
9.	1	20.	5000	31.	30	42.	40
10.	10	21.	6000	32.	300	43.	12.1
11.	100	22.	2000	33.	320	44.	321

Side B

1.	10	12.	1000	23.	40	34.	236
2.	10	13.	2000	24.	4	35.	3
3.	20	14.	9000	25.	0.4	36.	3
4.	80	15.	10	26.	0.7	37.	30
5.	10	16.	100	27.	500	38.	80
6.	100	17.	200	28.	5000	39.	400
7.	200	18.	700	29.	5300	40.	70
8.	700	19.	400	30.	6800	41.	80
9.	1	20.	4000	31.	20	42.	30
10.	10	21.	5000	32.	200	43.	12.1
11.	100	22.	8000	33.	230	44.	211

Problem Set

Box 1: 19 cm × 13 cm × 4 cm; 988 cm^2

Box 2: Answers will vary.

Lid: Answers will vary.

1. Answers will vary.
2. Answers will vary.
3. Answers will vary.

Reflection

Answers will vary.

Homework

1. 110 cm^3; answers will vary.
2. Answers will vary; V = 616 cm^3

Lesson 34

Problem Set

Answers will vary.

Reflection

Answers will vary.