



# **Mentor Manual**

**National PASS Center  
2013**



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# Two Plus You

## Unit 2 Mentor Manual

### Lesson 1

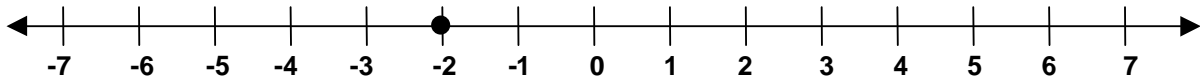
#### Pgs. 3 – 4

- one thousand, three hundred forty five
  - four hundred fifty six thousand, two hundred ten
  - one billion, nine hundred forty eight million, one hundred eleven thousand, nine hundred eighty five
  - one trillion, forty three million, five
- 6,812,034,393
- ten billions, b. millions period
- |                                 |                                 |                     |
|---------------------------------|---------------------------------|---------------------|
| a. 1,2 <u>3</u> 4,567           | c. 608,5 <u>7</u> 4             | e. 1,53 <u>2</u>    |
| b. 947,183, <u>2</u> 08,264,900 | d. 91 <u>7</u> ,333,273,194,732 | f. 62 <u>2</u> ,948 |
- one thousand nine
  - thirteen thousand, seventy-six
  - one hundred trillion
  - eight hundred forty-seven trillion, two hundred fifty-six billion, nine hundred fifty-eight million, one hundred twenty-three thousand, seven hundred thirty-two

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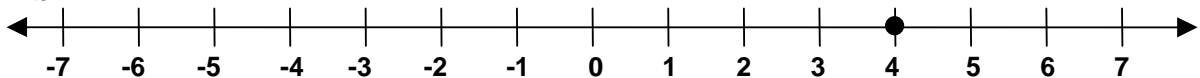
#### Pg. 8

##### 6. a.

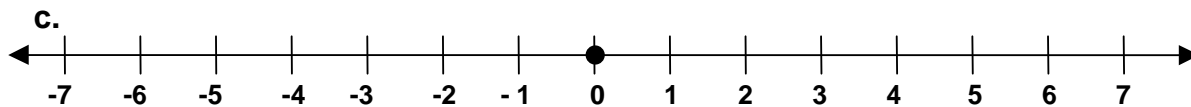


-2 is 2 away from zero, so  $|-2| = 2$ .

##### b.



4 is 4 away from zero, so  $|4| = 4$



0 is 0 away from 0, so  $|0| = 0$

**Pg. 9**

7. a. 13                      b. 7                      c. 400                      d. 10

8. The solution of the problem will be positive, because it is an absolute value.

**Lesson 2**

**Pg. 15**

1. a. 3                              b. 9                              c. 15  
     d. 10                            e. 13                            f. 15  
     g. 21                            h. 70                            i. 184

2. 2,236 peaches

3. 193

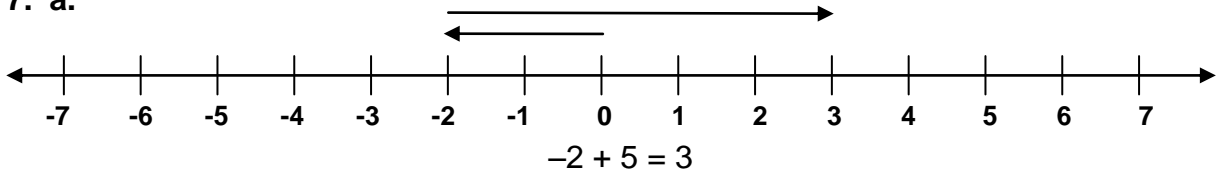
**Pg. 20**

4. a. 1                              b. 3                              c. 6  
     d. 1                              e. 7                              f. 8  
     g. 8                              h. 2                              i. 0
5. a.  $13 + \underline{4} = 17$                       b.  $9 + \underline{3} = 12$                       c.  $52 + \underline{4} = 56$   
     d.  $22 + \underline{5} = 27$                       e.  $12 + \underline{1} = 13$                       f.  $24 + \underline{30} = 54$

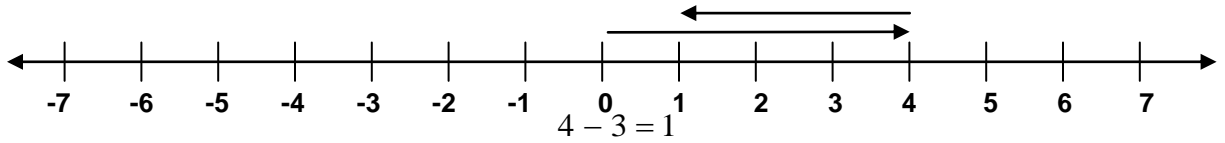
6. \$455 more

Pg. 28

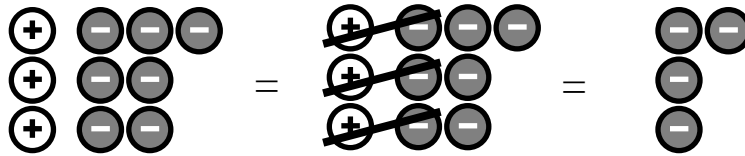
7. a.



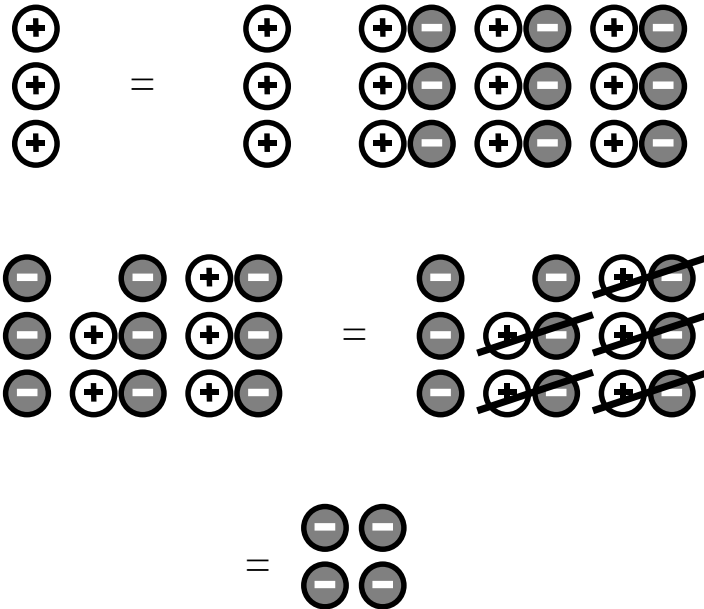
b.



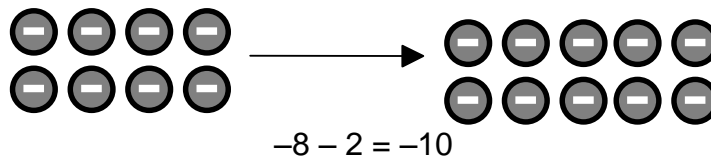
8. a. Way 1:



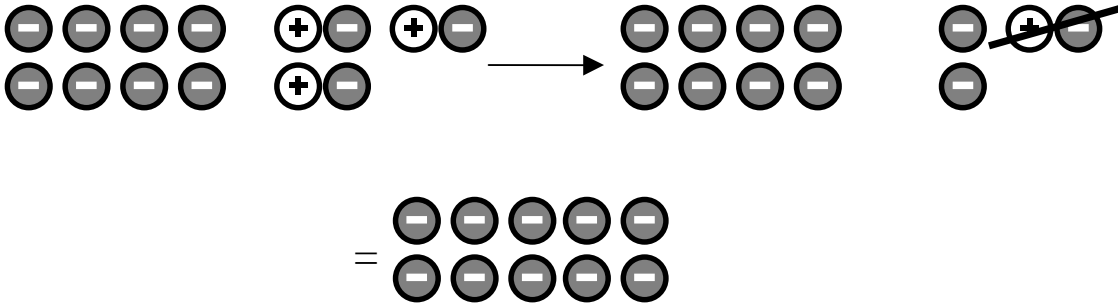
Way 2:



b. Way 1



Way 2



Pg. 30

9. a.  $3 + 2 = 5$

b.  $6 - 9 = -3$

c.  $-4 + (-3) = -7$

d.  $-7 - (-4) = -7 + 4 = -3$

### Lesson 3

Pg. 35

1. a. 6

b. 63

c. 15

d. 28

e. 27

f. 55

g. 8

h. 60

i. 64

Pg. 36

2. a. 27

b. 13

$$\begin{array}{r} \times 23 \\ 81 \\ \hline 540 \end{array}$$

$$\begin{array}{r} \times 13 \\ 39 \\ \hline 130 \end{array}$$

$$\begin{array}{r} 81 \\ \hline 540 \\ \hline 621 \end{array}$$

$$\begin{array}{r} 39 \\ \hline 130 \\ \hline 169 \end{array}$$

$$\begin{array}{r} 540 \\ \hline 621 \end{array}$$

$$\begin{array}{r} 130 \\ \hline 169 \end{array}$$

621

169

3.  $24 \times 12 = 24$

$$\begin{array}{r} \times 12 \\ 48 \\ \hline 240 \end{array}$$

$$\begin{array}{r} 48 \\ \hline 240 \end{array}$$

$$\begin{array}{r} 240 \\ \hline 288 \end{array}$$

288

**Pg. 44**

4. a.  $2 \times \underline{6} = 12$

b.  $4 \times \underline{4} = 16$

c.  $25 \times \underline{2} = 50$

d.  $8 \times 3 = 24$

e.  $7 \times \underline{8} = 35$

f.  $2 \times \underline{9} = 18$

g.  $4 \times \underline{25} = 100$

h.  $5 \times \underline{4} = 20$

i.  $12 \times \underline{3} = 36$

**Pg. 45**

5. 
$$\begin{array}{r} 14 \\ 2 \overline{)28} \\ \underline{-2} \\ -8 \\ \underline{-0} \\ 0 \end{array}$$

6. 
$$\begin{array}{r} 124 \\ 2 \overline{)248} \\ \underline{-2} \\ -4 \\ \underline{-4} \\ 8 \end{array}$$

7. 
$$\begin{array}{r} 6 \text{ R3} \\ 4 \overline{)27} \\ \underline{-24} \\ 3 \end{array}$$

8. 
$$\begin{array}{r} 10 \text{ R2} \\ 3 \overline{)32} \\ \underline{-30} \\ 2 \end{array}$$

9. 
$$\begin{array}{r} 44 \text{ R3} \\ 5 \overline{)223} \\ \underline{-20} \\ 23 \\ \underline{-20} \\ 3 \end{array}$$

10. 
$$\begin{array}{r} 166 \text{ R4} \\ 6 \overline{)1000} \\ \underline{-6} \\ 40 \\ \underline{-36} \\ 40 \\ \underline{-36} \\ 4 \end{array}$$

11. 
$$\begin{array}{r} 356 \\ 4 \overline{)1424} \\ \underline{-12} \\ 22 \\ \underline{-20} \\ 24 \\ \underline{-24} \\ 0 \end{array}$$

**Pg. 49**

12. a. 6

b. -8

c. 30

d. -32

e. 63

f. -24

g. 132

h. 56

13. a. 4

b. -2

c. -2

d. 2

e. -5

f. -4

g. 10

h. -2

**Lesson 4**

**Pg. 53**

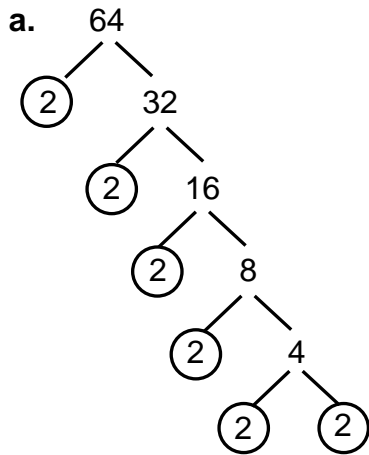
1. a. 1, 2, 3, 4, 6, 8, 12, 24

b. 1, 2, 5, 10

c. 1, 2, 3, 4, 6, 9, 12, 18, 36

**Pg. 57**

2. Factor trees should resemble this example:

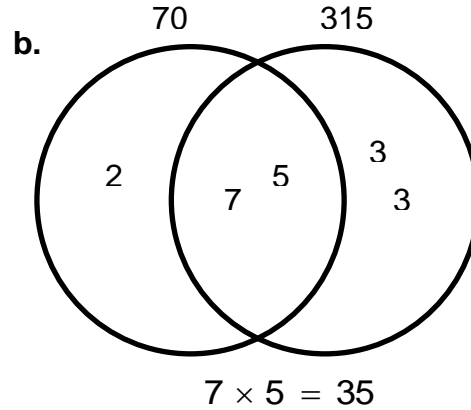
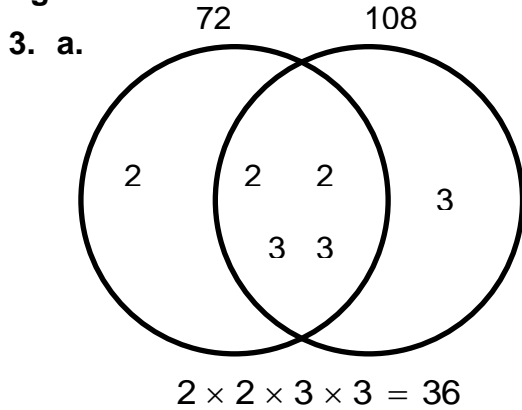


$$64 = 2 \times 2 \times 2 \times 2 \times 2 \times 2$$

b.  $100 = 2 \times 2 \times 5 \times 5$

c.  $36 = 2 \times 2 \times 3 \times 3$

**Pg. 60**



**Pg. 63**

4. a. 16

b. 168

c. 221



## Lesson 5

Pg. 71 (72 in Spanish edition)

1. a.  $\frac{1}{11}$  or  $\left(\frac{1}{9}\right)$

b.  $\frac{6}{17}$  or  $\left(\frac{6}{15}\right)$

c.  $\frac{13}{19}$  or  $\left(\frac{11}{19}\right)$

Pg. 74

2. a.  $\frac{3}{5} = \frac{6}{10} = \frac{9}{15} = \dots$

b.  $\frac{2}{3} = \frac{4}{6} = \frac{6}{9} = \dots$

3. a.  $\frac{3}{5} = \frac{12}{\boxed{20}}$

b.  $\frac{16}{24} = \frac{\boxed{8}}{12}$

Pg. 76

4. a.  $\frac{4}{12} = \frac{1}{3}$

b.  $\frac{6}{15} = \frac{2}{5}$

c.  $\frac{4}{5}$  is in simplest form

Pg. 77

5. a.  $\frac{2}{4}$

6. a.  $\frac{8}{16} = \frac{1}{2}$

b.  $\frac{12}{18} = \frac{2}{3}$

c.  $\frac{9}{10}$

and d.  $\frac{13}{64}$  are in simplest form

Pg. 80

7. a.  $\frac{4}{3}$

b.  $\frac{23}{8}$

c.  $\frac{15}{4}$

d.  $\frac{28}{5}$

Pg. 82

8. a.  $1\frac{2}{3}$

b.  $2\frac{5}{8}$

c.  $1\frac{1}{4}$

d.  $2\frac{1}{5}$

## Lesson 6

Pg. 85

1.

a.		3		1				
b.		2	•	0	3			
c.		8	•	4	6	3		
d.		7	•	1	4	6	4	
e.	1	3	•	0	0	0	0	1
	<b>Hundreds</b>	<b>Tens</b>	<b>Ones</b>	<b>Tenths</b>	<b>Hundredths</b>	<b>Thousandths</b>	<b>Ten-Thousandths</b>	<b>Hundred-Thousandths</b>

- a. Tenths    b. Hundredths    c. Thousandths    d. Ten-thousandths  
 e. Hundred-thousandths

Pg. 88

2. a. 2.6 is two and six-tenths,  $2\frac{6}{10} = 2\frac{3}{5} = \frac{13}{5}$

b. .43 is forty-three hundredths,  $\frac{43}{100}$ . It is not a mixed number.

c. 1.6524 is one and six thousand, five hundred twenty-four ten-thousandths,

$$1\frac{6524}{10000} = 1\frac{1631}{2500} = \frac{4131}{2500}$$

Pg. 89

3. a. True    b. False    c. False    d. True    e. True    f. True

Pg. 92

4. a.  $.12 < .13$     b.  $.102 < .13$     c.  $1.35 > .999$     d.  $16.82736 < 16.82747$

**Pg. 99**

- |                      |                                    |
|----------------------|------------------------------------|
| 5. $0.\overline{81}$ | 8. $0.375 \approx 0.38$            |
| 6. 1.375             | 9. $0.\overline{66} \approx 0.67$  |
| 7. $0.8\overline{3}$ | 10. $0.\overline{45} \approx 0.45$ |

**Pg. 100**

10. 4756.5 is four thousand, seven hundred fifty-six and five tenths.

$$4756 \frac{5}{10} = 4756 \frac{1}{2} = \frac{9513}{2}$$

- |                        |                              |          |
|------------------------|------------------------------|----------|
| 11. a. $3.425 < 6.425$ | b. $1.089 < 1.1$             |          |
| c. $0.001 < 0.01$      | d. $142.284756 > 142.284755$ |          |
| 12. a. 7.43            | b. 14.27                     | c. 9.47  |
| d. 1.11                | e. 0.99                      | f. 13.89 |

13. 24971894781.34

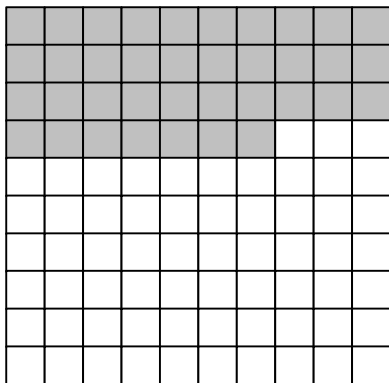
32.823743239

14. a. \$.25                      b. \$.20                      c. \$.89                      d. \$1.40

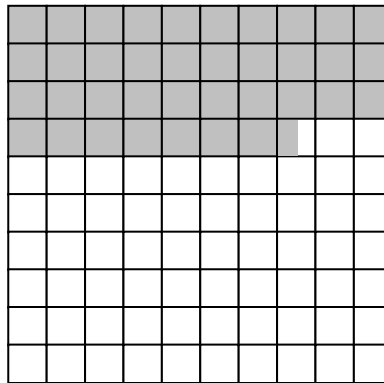
**Lesson 7**

**Pg. 103**

1. Each box is worth 1  
37 is 37% of 100

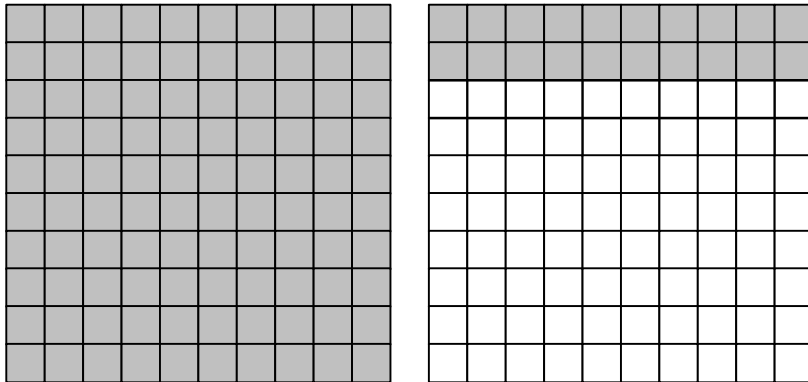


2. Each box is worth 2  
75 is 37.5% of 200



**Pg. 104**

3. Each box is worth .5. 60 is 120% of 50



**Pgs. 110 – 112**

4.  $\frac{4}{5} = 80\%$

5. 329

6. a. .1                      b. .25                      c. .19                      d. .61  
 e. .721                      f. 1.29

7. a. 14%                      b. 10%                      c. 78%                      d. 1%  
 e. 102%                      f. 75%                      g. 0.3%                      h. 245%

8. a. 3                      b. 11.25                      c. 23.5                      d. 5

9. a. 27%                      b. 25%                      c. 120%  
 d. 87.5%                      e. 17%                      f. 90%

10. a. 6.25%                      b. 91