Answers for Grade 6 Group Assignments - Quarter #4

Notes for Parents:

- Answers for group assignment problems that are out of the workbook can be found in the "G6 Workbook Answer Key".
- It is probably best not to give this document to the students, as it might spoil it for them.
- This answer key doesn't include all answers.

Week 25

2) a) There are many different answers.
1 way: 6cm, 11cm, 5cm, 6cm, 1cm, 5cm.
another way: 10cm, 10cm, 5cm, 8cm, 5cm, 2cm.
b) There are many different answers. 1 way: 5cm, 24cm, 4cm, 10cm, 2cm, 4cm, 3cm, 10cm.

3) a) 3^2 b) $3^2 \times 11$ c) $3^3 \times 37$ d) $3^2 \times 11 \times 101$ e) $3^2 \times 41 \times 271$

4) $40

5) 36 students

Week 26

for Tuesday.

- **Divisibility Magic!**
  7 x 11 x 13 = 1001. Any three digit number times 1001 will give us that number side by side.
- **Puzzle!** Suzy started with 13 cards and Ann started with 7 cards.

for Thursday.

Rules for Repeating Decimals

Denominator = 3: Theorem: A fraction with 3 in the denominator converts into a decimal with 1 digit under the repeat bar.
Denominator = 5: Theorem: …does not repeat.
Denominator = 9: Theorem: …1 digit under the repeat bar.
Denominator = 11: Theorem: …2 digits under the repeat bar.
Denominator = 8: Theorem: …does not repeat.
Denominator = 6: Theorem: …1 digit under the repeat bar.
Denominator = 25: Theorem: …does not repeat.
Denominator = 13: Theorem: : …6 digits under the repeat bar.
Denominator = 37: Theorem: : …3 digits under the repeat bar.
Denominator = 74: Theorem: : …3 digits under the repeat bar.
Denominator = 65: Theorem: : …6 digits under the repeat bar.
Denominator = 101: Theorem: : …4 digits under the repeat bar.
Denominator = 19: Theorem: : …18 digits under the repeat bar.

Puzzle: You can buy 22 peaches.

Week 27

for Tuesday.

- **Divisibility Magic – Part II**
  1) 1001
  2) 1001
  3) 7 x 11 x 13
  4) 1001
  5) 1001
  6) 7 x 11 x 13 x 953
  7) 5^3 x 7 x 11 x 13
  8) 2^7 x 7 x 11 x 13
  9) 5 x 7^2 x 11^2 x 13

- **Puzzles! Missing-Digit Multiplication**

a)
```
  538
x 74
2152
+ 37660
39812
```

b)
```
  59
x 73
177
+ 4130
4307
```

c)
```
 2386
x 22
4772
+ 47720
52492
```

for Thursday.

- **Rules for repeating decimals:**
  1) 2, 4, 5, 8, 10, 16, 20, 25, 32, 40, 50, 64, 80, 100…
  2)

$2 = 2$	$10 = 2 \times 5$	$32 = 2^5$	$64 = 2^6$
$4 = 2^2$	$16 = 2^4$	$40 = 2^3 \times 5$	$80 = 2^4 \times 5$
$5 = 5$	$20 = 2^2 \times 5$	$50 = 2 \times 5^2$	$100 = 2^2 \times 5^2$
$8 = 2^3$	$25 = 5^2$		

  3) If the prime factorization of the denominator is just twos and fives (in the base of the exponent), then the resulting decimal will not repeat.

- **A Strange Calculation**
  1) 12,345,679 2) 111,111,111 3) 999,999,999 4) $3^4 \times 37 \times 333667$

Week 28

for Tuesday.

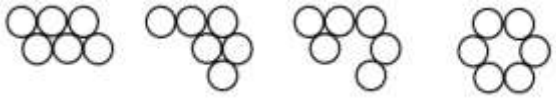
1) 2
2) 4
3) 5
4) 5
5) 6
6) 8
7) 9
8) 7
9) 8
10) $0.\overline{36}$
11) $0.\overline{518}$
12) $0.\overline{5247}$
13) $0.\overline{55350}$
14) 3
15) 6
16) 0
17) 2
18) 6
19) 3

for Thursday.

- **Baseball Puzzle:**
  1) 162x30÷2 = 2,430) (We divide by two because there are two teams in each game.)
  2) Approximately 120,000 baseballs
  3) Approximately 19 tons
- **Dartboard Puzzle:**
  4) One possible solution is to hit 16 twice, and 17 four times)
- **Repeating Decimals:**
  5) 1 digit, $.0.\overline{2}$
  6) 2 digits, $0.\overline{54}$
  7) 4 digits, $0.\overline{6039}$
  8) 4 digits, $0.\overline{3839}$
  9) 0 digits, 0.15
  10) 5 digits, $0.\overline{30627}$
  11) 7 digits, $0.\overline{5900193}$

Week 29

1) Wishful Banking:
   Since each month we are multiplying by two, we can express the relationship between the number of months and the balance as $ = 0.25·2M, where $ is the balance and M is the number of months. An equivalent, and more convenient formula is $ = 2M−2. Either way, the answers work out to:
   - After one year: $1024
   - After two years: $4,194,304
   - After five years: $288,230,376,151,711,744 (288 quadrillion dollars)
2) Coin Puzzles
   a) 26 nickels, 14 quarters
   b) 8 nickels, 24 dimes, 8 quarters
3) Number Puzzle
   6 and 17
4) The Race
   The order is: Ed, Abe, Dan, Chuck, Ben.
5) Kim's Favorite Number.
   102
6) A Circle of Coins
   It can be done in three moves →



Week 30

for Thursday.

- **Comparing Money.** $112
- **Weighing Quarters.** 5 pounds
- **Cutting a Board.** Only 11 cuts are necessary. Therefore, the total amount of time needed for all of the cuts is 5½ minutes.
- **Summing Primes**
  a) 5+13+23. (There are many other possible solutions.)
  b) 2+3+13+23. (There are many other possible solutions, but each one must include a 2.)
- **The Hungry Cat**
  He ate 14 mice on the first day.

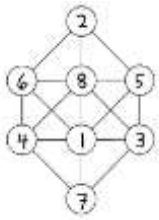
Week 31

for Tuesday.

- **Big Square Root.** $\sqrt{717409}$ = 847
- **A 3x3 Magic Square** →→→→→→→→→→

4	9	2
3	5	7
8	1	6

- **Connected Circles.** →→→→→→→→→→→→→→→→→→→→→→



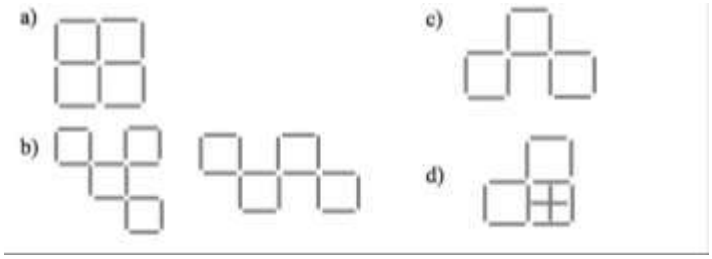
- **Two Number Puzzle**: 54 and 8

for Thursday.

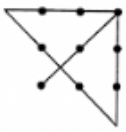
- **Two Number Puzzle.** 314 and 182
- **Basketball Score**. The Tigers scored 60 points.

Week 32

- **Stick Puzzles**. →→→→→→→→→→→→→→→→→→



- **Connect the Dots Square**:



- **Siblings**
  a) She has 7 children (5 daughters and 2 sons).
  b) There are 4 children (2 boys and 2 girls).
- **Missing-Digit Multiplication**

```
   573
 x 219
  5157
  5730
+ 114600
  125487
```