Numbers and Mental Math
Check Your Understanding

Question 1

Use the mental math strategy of rounding then subtracting or adding to add the following numbers. Write down how you would change the numbers in your head for each question.

   a. $51 + 16$
   b. $69 + 24$
   c. $380 + 255$
   d. $274 + 620$
   e. $278 + 210$

Question 2

Use the mental math strategy of splitting into place values to add the following numbers. Write down how you would change the numbers in your head for each question.

   a. $24 + 33$

   b. $57 + 48$

   c. $136 + 313$

   d. $565 + 434$

   e. $238 + 517$

Question 3

Use the mental math strategy of your choice to subtract the following numbers. Write down how you would change the numbers in your head for each question.

   a. 65 - 23
   b. 89 - 72
   c. 58 - 24
   d. 72 - 36
   e. 92 - 65
   f. 45 - 26

Question 4

Use the strategy of halving and doubling to solve the following multiplication problems. Write down how you would change the numbers in your head for each question.

   a. $14 \times 8 =$

   b. $4 \times 24 =$

   c. $16 \times 11 =$

   d. $18 \times 5 =$

   e. $6 \times 16 =$

   f. $12 \times 16 =$

   g. $8 \times 18 =$

Question 5

Use the Split Strategy to solve the following multiplication problems. Write down how you would change the numbers in your head for each question.

a. $9 \times 87 =$

b. $8 \times 59 =$

c. $3 \times 71 =$

d. $6 \times 77 =$

e. $6 \times 95 =$

f. $7 \times 52 =$

g. $9 \times 87 =$

Answer Key

Answer 1

a. 67

b. 93

c. 635

d. 894

e. 488

Answer 2

a. 57

b. 105

c. 449

d. 999

e. 755

Answer 3

a. 42

b. 17

c. 34

d. 36

e. 27

f. 19

Answer 4

a. 112

b. 96

c. 176

d. 90

e. 96

f. 192

g. 144

Answer 5

a. 783

b. 472

c. 213

d. 462

e. 570

f. 364

g. 783

Factors - Check Your Understanding

Question 1

Find all of the factors of each number.

    a. 12
    b. 21
    c. 86
    d. 100
    e. 24

Question 2

Which choice is not a factor of 36?

    a. 9
    b. 2
    c. 7
    d. 4

Question 3

Which choice is not a factor of 20?

    a. 5
    b. 15
    c. 10
    d. 20

Question 4

Which choice is not a factor of 33?

    a. 8
    b. 11
    c. 33
    d. 3

Question 5

Which choice is not a factor of 64?

    a. 64
    b. 19
    c. 2
    d. 16

Question 6

Which choice is not a factor of 34?

a. 2
b. 17
c. 8
d. 34

Question 7

Which choice is a factor of 22?

a. 22
b. 19
c. 5
d. 6

Question 8

Which choice is a factor of 70?

a. 19
b. 10
c. 4
d. 3

Question 9

Which choice is a factor of 91?

a. 12
b. 7
c. 17
d. 9

Question 10

Which choice is not a factor of 78?

a. 78
b. 2
c. 13
d. 18

Question 11

Which choice is a factor of 6?

a. 15
b. 3
c. 14
d. 16

Question 12

Which choice is a factor of 87?

a. 7
b. 29
c. 11
d. 18

Question 13

Which choice is a factor of 82?

a. 4
b. 13
c. 2
d. 20

Question 14

List the factors for each of the numbers.

a. 61
b. 69
c. 6
d. 51
e. 22
f. 25
g. 43
h. 62
i. 61
j. 16
k. 98

Answer Key

Answer 1

    a. 1, 2, 3, 4, 6. 12
    b. 1, 3, 7, 21
    c. 1, 2, 43, 86
    d. 1, 2, 4, 5,10, 20, 25, 50, 100
    e. 1, 2, 3, 4, 6, 8, 12, 24

Answer 2

C) 7

Answer 3

B

Answer 4

A

Answer 5

B

Answer 6

C

Answer 7

A

Answer 8

B

Answer 9

B

Answer 10

D

Answer 11

B

Answer 12

B

Answer 13

C

Answer 14

    a. 1, 61
    b. 1, 3, 23, 69
    c. 1, 2, 3, 6
    d. 1, 3, 17, 51
    e. 1, 2, 11, 22
    f. 1, 5, 25
    g. 1, 43
    h. 1, 2, 31, 62
    i. 1, 61
    j. 1, 2, 4, 8, 16
    k. 1, 2, 7, 14, 49, 98

Greatest Common Factor
Check Your Understanding

Question 1

Find the Greatest Common Factor.

14, 8

Question 2

Find the Greatest Common Factor.

27, 6

Question 3

Find the Greatest Common Factor.

30, 6

Question 4

Find the Greatest Common Factor.

12, 24

Question 5

Find the Greatest Common Factor.

33, 39

Question 6

Find the Greatest Common Factor.

42, 30

Question 7

Find the Greatest Common Factor.

42, 18

Question 8

Find the Greatest Common Factor.

6, 12

Question 9

Find the Greatest Common Factor.

18, 14

Question 10

Find the Greatest Common Factor.

20,48

Question 11

Find the Greatest Common Factor.

24, 60

Question 12

Find the Greatest Common Factor.

12, 22

Question 13

Find the Greatest Common Factor.

36, 48

Question 14

Find the Greatest Common Factor.

24, 45

Question 15

Find the Greatest Common Factor.

28, 56

Question 16

Find the Greatest Common Factor.

14, 30

Question 17

Find the Greatest Common Factor.

28, 22, 90

Question 18

Find the Greatest Common Factor.

42, 35, 21

Question 19

Find the Greatest Common Factor.

75, 45, 90

Question 20

Find the Greatest Common Factor.

24, 84, 48

Answer Key

Answer 1

2

Answer 2

3

Answer 3

6

Answer 4

12

Answer 5

3

Answer 6

6

Answer 7

6

Answer 8

6

Answer 9

2

Answer 10

4

Answer 11

12

Answer 12

2

Answer 13

12

Answer 14

3

Answer 15

28

Answer 16

2

Answer 17

2

Answer 18

7

Answer 19

15

Answer 20

12

Least Common Multiple
Check Your Understanding

Question 1

List the first 5 multiples of these numbers:

    a. 4
    b. 13
    c. 22

Question 2

Which of the following numbers are a multiple of 7?

    a. 35
    b. 64
    c. 154
    d. 246
    e. 287
    f. 329
    g. 91

Question 3

Find the Least Common Multiple of the following sets of numbers.

    a. 9, 15
    b. 22, 6
    c. 24, 40
    d. 3, 6, 8

Question 4

Anna and Valborga have the same number of stamps. Anna puts her stamps in rows of 6. Valborga puts her stamps in rows of 8. Neither of them have any partial rows. What is the least number of stamps that they could each have?

Question 5

Two neon signs are turned on at the same time. Both signs blink as they are turned on. One sign blinks every seconds. The other sign blinks every 21 seconds. In how many seconds will they blink together again?

Question 6

Raven has pieces of train track that are 16 cm long that she is connecting to form a track that her train can trav on. Caleb is also trying to construct a track for his train but is using track pieces that are 25 cm long. How long will the shortest track be if the track that Melanie builds ends up being the same length as Martin's track?

Answer Key

Answer 1

 a. 4, 8, 12, 16, 20
 b. 13, 26, 39, 52, 65
 c. 22, 44, 66, 88, 110

Answer 2

a, c, e, f, g are multiples of 7.

Answer 3

 a. 45
 b. 66
 c. 120
 d. 24

Answer 4

24

Answer 5

63

Answer 6

400 cm

Prime Factorization
Check Your Understanding

Question 1

Circle all the prime numbers. Reminder: Prime numbers only have 2 factors.

3 14 7 5 30 8 109 10 4 23 9

31 12

Question 2

Circle all the composite numbers. Reminder: Composite numbers have more than 2 factors.

29 20 18 17 31 27 9 12 0 8 6 11 5

Question 3

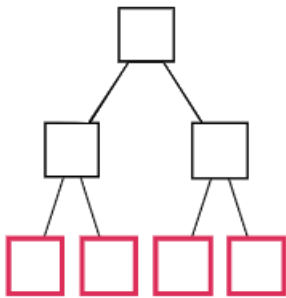Circle the numbers that are neither prime nor composite.
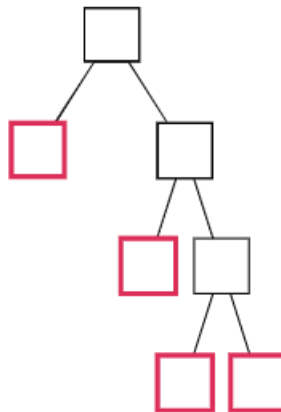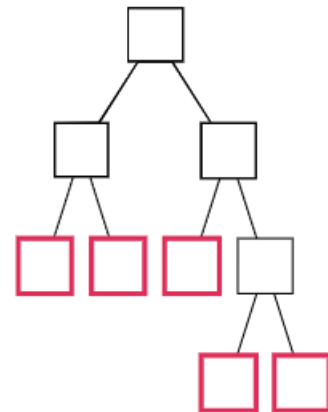
4 1 10 12 0 9 16

Question 4

Find the prime factors of each number. Then write the prime factorization for that number.
Use a factor tree to determine your answer.

   a. 18
   b. 54
   c. 63
   d. 108

Question 5

The following shows three factor trees where the numbers are unknown.

    a. Could any of these factor trees be a possible arrangement for the number 40?

    b. Which of these trees could be possible arrangements for the number 24?

Question 6

What is the prime factorization of the following numbers? Answer with exponents where possible.

    a. 100

    b. 60

    c. 240

    d. 33

    e. 68

    f. 3024

Answer Key

Answer 1

3, 7, 5, 109, 23, 31

Answer 2

20, 18, 27, 9, 12, 8, 6

Answer 3

1, 0

Answer 4

   a. 2 x 3 x 3
   b. 2 x 3 x 3 x 3
   c. 3 x 3 x 7
   d. 2 x 2 x 3 x 3 x 3

Answer 5

   a. The first 2 factor trees are possible for the number 40.
   b. The first 2 factor trees are also possible for the number 24.

Answer 6

   a. $2^2 \times 5^2$
   b. $2^2 \times 3 \times 5$
   c. $2^4 \times 3 \times 5$
   d. 3 x 11
   e. $2^2 \times 17$
   f. $2^4 \times 3^3 \times 7$

Using Prime Factorization to Find GCF / LCM
Check Your Understanding

Question 1

Use prime factorization to find the greatest common factor and the least common multiple of each pair of numbers.

a. 84, 60
b. 54, 90
c. 112, 128
d. 60, 66
e. 44, 14
f. 13, 31
g. 42, 49

Question 2

Would you use the greatest common factor or the least common multiple to solve the following problems?

a. Dividing students and teachers into equal groups on multiple school buses.
b. Two cars travelling at different speeds around a track reaching a certain point at the same time.
c. Determining when a student will first have a quiz and a test on the same day, if the student has a quiz every 6 days and a test every 16 day

Question 3

Kerry has 40 walnuts and 30 almonds. She wants to put them in equal groupings without leaving any out. Wh is the largest number of groups she can make?

Hint: You are asked to divide the numbers into smaller amounts – LCM or GCF?

Question 4

Bella has two ribbons measuring 168 cm and 264 cm. She wants to cut them into smaller pieces that are all o integer length and equal in length. Without any waste, what is the longest length that she can make the pieces? How many total ribbon pieces will she get?

Question 5

A shopkeeper sells candles in packets of 12 and candle stands in packet of 8. What is the least number of candles and candle stands Nita should buy so that there will be one candle for each candle stand?

Question 6

Given that $36{,}000 = 2^5 \times 3^2 \times 5^3$ and $37{,}800 = 2^3 \times 3^3 \times 5^2 \times 7$, find the greatest common factor and the least commo multiple of 36,000 and 37,800.

Question 7

Emanuel noticed that the house number of his home address is divisible by both 72 and 112.

   a. What is the smallest his house number could be?
   b. If the house number is between 3000 and 4000, what is the house number?

Answer Key

Answer 1

a. GCF = $2^2 \times 3 = 12$ LCM = 420
b. GCF = 18   LCM = 270
c. GCF = 16   LCM = 896
d. GCF = 6   LCM = 660
e. GCF = 2   LCM = 308
f. GCF = 1   LCM = 403
g. GCF = 7   LCM = 294

Answer 2

a. Greatest Common Factor
b. Least Common Multiple
c. Least Common Multiple

Answer 3

He can make 10 groups. (GCF)

Answer 4

Since $168 = 2^3 \times 3 \times 7$ and $264 = 2^3 \times 3 \times 11$, then the GCF(168,264)=$2^3 \times 3 = 24$. If Bella cuts each ribbon into piec of length 24 cm, she gets 7+11=18 identical pieces of ribbon.

Answer 5

The lowest common multiple is 24. So, the least number of candles and candle stands that Nita should buy is 24.

Answer 6

GCF (36,000; 37,800) = 2^3 x 3^2 x 5^2 = 1800

LCM (36,000; 37,800) = 2^5 x 3^3 x 5^3 x 7 = 756,000

Answer 7

a. Since $72 = 2^3 \times 3^2$ and $112 = 2^4 \times 7$, then the LCM (72,112) $= 2^4 \times 3^2 \times 7 = 1008$. Therefore, the smallest possible house number is 1008.
b. Search for multiples of the LCM between house numbers 3000 and 4000. The only multiple in that range is 3 x 1008 = 3024. Emanual's house number must be 3024.