

USING THE KRAMER METHOD OF FACTORING NUMBERS INTO THEIR FACTOR PAIRS, CAN YOU FIND THE SMALLEST NUMBER WITH THE FOLLOWING NUMBER OF FACTOR PAIRS?

2 FACTOR PAIRS

3 FACTOR PAIRS

4 FACTOR PAIRS

5 FACTOR PAIRS

6 FACTOR PAIRS

7 FACTOR PAIRS

8 FACTOR PAIRS

9 FACTOR PAIRS

10 FACTOR PAIRS

Worksheets and answers are on the following pages.

<u>Number of Factor Pairs</u>	:	<u>Smallest number with the given number of factor pairs.</u>
2		4
3		12
4		24
5		36
6		60
7		192
8		210
9		180

look at the worksheets on the following pages to see how these numbers are factored.

FACTOR 4 (the smallest number with 2 factor pairs)

FACTOR 12 (the smallest number with 3 factor pairs)

FACTOR 24 (the smallest number with 4 factor pairs)

FACTOR 4 (the smallest number with 2 factor pairs)

1	4
2	2

FACTOR 12 (the smallest number with 3 factor pairs)

1	12
2	6
4	3

Notice that when we arrive at a prime number on the right column, we are done factoring that number.

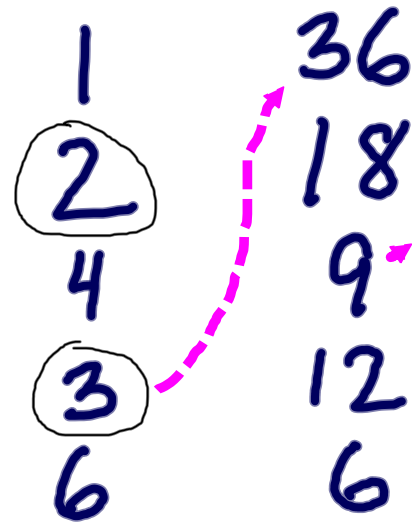
FACTOR 24 (the smallest number with 4 factor pairs)

1	24
2	12
4	6
8	3

FACTOR 36 (the smallest number with 5 factor pairs)

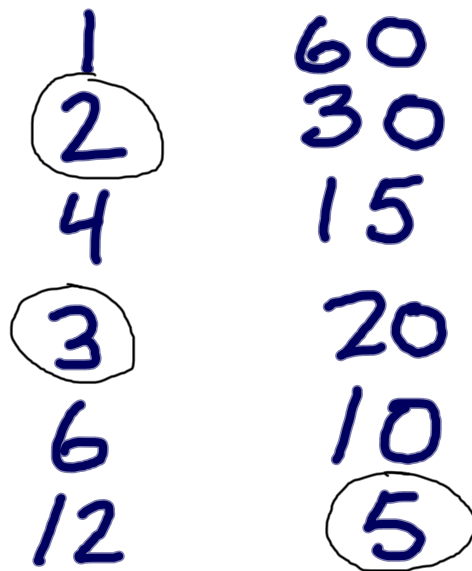
FACTOR 60 (the smallest number with 6 factor pairs)

FACTOR 36 (the smallest number with 5 factor pairs)



Notice that when we hit a non-prime odd number on the right side, we cannot "double and half", so we look at the odd number to find the next smallest factor that we have not used yet. In this case, the next factor of 9 was 3 so we divide 3 into 36 to get 12; since that number is even, we can continue our process of double/half.

FACTOR 60 (the smallest number with 6 factor pairs)



FACTOR 192 (the smallest number with 7 factor pairs)

FACTOR 210 (the smallest number with 8 factor pairs)

FACTOR 192 (the smallest number with 7 factor pairs)

1	192
2	96
4	48
8	24
16	12
32	6
64	3

FACTOR 210 (the smallest number with 8 factor pairs)

1	210
2	105
3	70
6	35
5	42
10	21
7	30
14	15

FACTOR 180 (the smallest number with 9 factor pairs)

FACTOR 180 (the smallest number with 9 factor pairs)

1	180
2	90
4	45
3	60
6	30
12	15
5	36
10	18
20	9

FACTOR 240 (the smallest number with 10 factor pairs)

FACTOR 240 (the smallest number with 10 factor pairs)

1	240
2	120
4	60
8	30
16	15
3	80
6	40
12	20
24	10
48	5