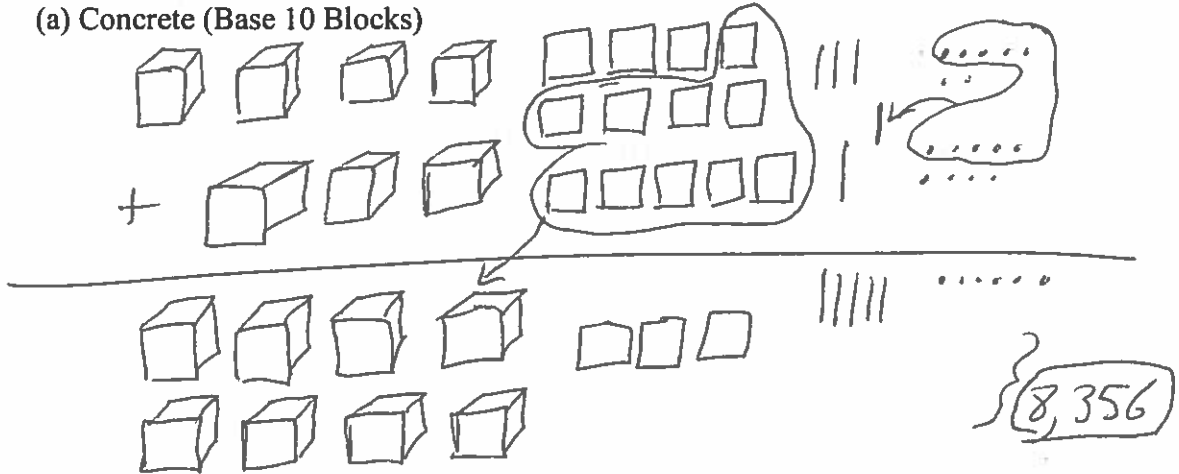**Addition and Subtraction of Whole Numbers**
Methods

Name _____ (KEY)_____

I. Perform the following addition problem using 8 different methods:

4837 + 3519

(a) Concrete (Base 10 Blocks)

8,356

(b) Denominate

1 thousand   1 ten
4 thousands 8 hundreds 3 tens 7 ones
+ 3 thousands 5 hundreds 1 ten 9 ones
_____
8 thousands 13 hundreds 5 tens 16 ones
                3   6

[2 trades: 10 ones = 1 ten +
            10 hundreds = 1 thousand]

(c) Expanded

  1000   10
4000 + 800 + 30 + 7
+ 3000 + 500 + 10 + 9
_____
8000 + 1300 + 50 + 16
         300   6
     = (8,356)

(d) Partial Sums, Left-to-Right, and Scratch   (e) Lattice   (f) Standard or Traditional

```
   4837
 + 3519
 _____
     16
     40
   1300
   7000
  _____
  (8,356)
```

```
   4837
  +3519
  _____
  7000
 + 1300
 +   40
 +   16
 _____
 (8,356)
```

```
  4837
 +3519
 _____
  7346
 8   5
  (8,356)
```

```
    / /
  4837
 +3519
 _____
 (8,356)
```

M
7/

II.   Perform the following subtraction problem using 3 different methods:

342 − 86

(a) Concrete (drawing Base 10 Blocks)   (b) Dutch

Take away 8 longs + 6 units
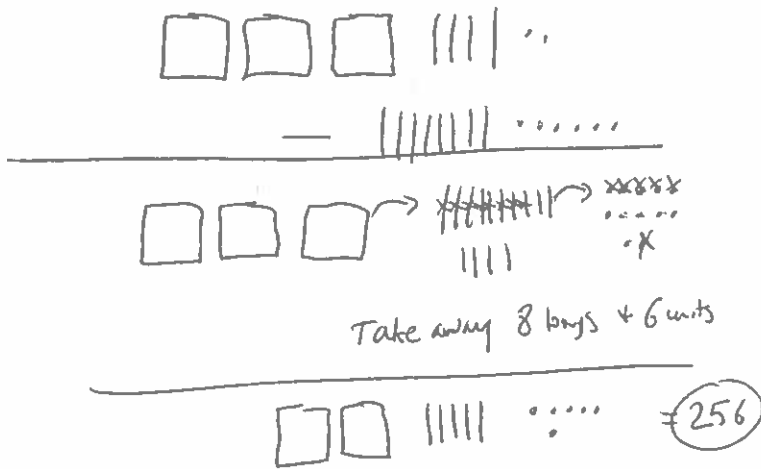
342
$- \ 86$

300
-40
$\underline{\ -4}$
$= 260 - 4 \ \boxed{256}$

(256)

(c) Standard Algorithm

$\begin{array}{r} {}^{2}\cancel{3}{}^{3}\cancel{4}{}^{1}2 \\ -\ 86 \\ \hline \boxed{256} \end{array}$
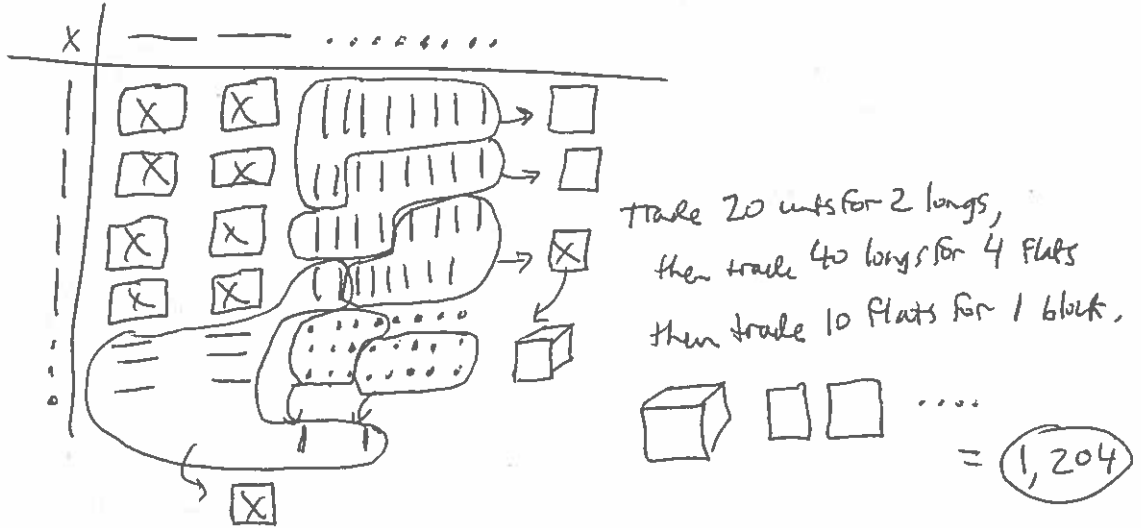
max 30

Multiplication and Division of Whole Numbers
Methods

Name _____ KEY _____

III.   Perform the following multiplication problem using 5 different methods:

43 x 28

(a) Concrete (Base 10 Blocks)

Trade 20 units for 2 longs,
then trade 40 longs for 4 flats
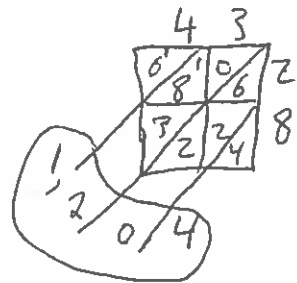then trade 10 flats for 1 block.

= 1,204

(b) Partial Products

$$\begin{array}{r} 43 \\ \times\ 28 \\ \hline 24 \\ 320 \\ 60 \\ 800 \\ \hline 1204 \end{array}$$

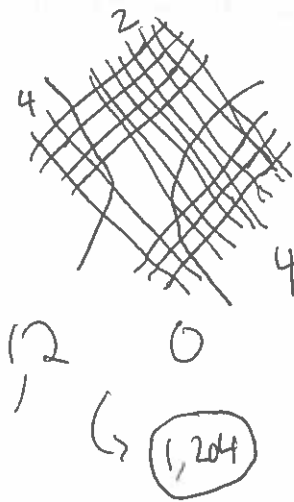(c) "FOIL"

$(40+3)(20+8)$

$= 800 + 320 + 60 + 24$

$= 1,204$

(d) Lattice

(e) Russian Peasant

Half	Double
43	(28)
21	(56)
10	112
5	(224)
2	448
1	(896)

1,204

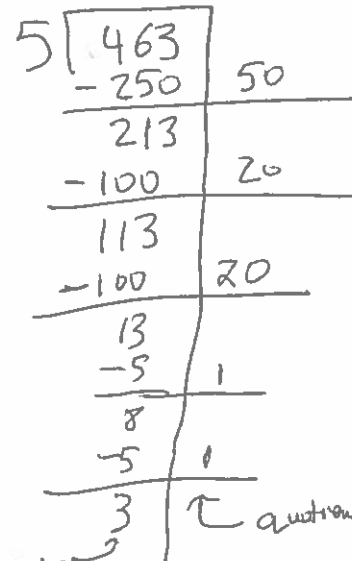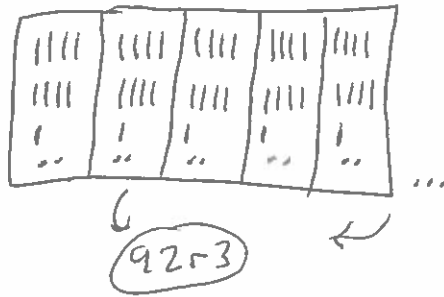(f) Japanese

1,204

(g) Standard or Traditional

$$\begin{array}{r} \overset{2}{4}3 \\ \times\ 28 \\ \hline 344 \\ 860 \\ \hline 1204 \end{array}$$

IV. Perform the following division problem using 2 different methods:

$463 \div 5$
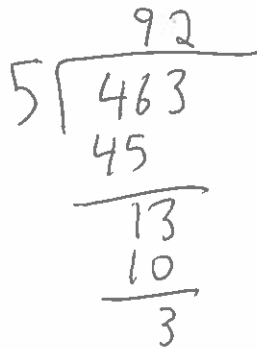
(a) Concrete (Base 10 Blocks)

92 r 3

(b) Repeated Subtraction (the efficient way)

$$5 \overline{)463}$$
$$-250 \quad | \quad 50$$
$$\overline{213}$$
$$-100 \quad | \quad 20$$
$$\overline{113}$$
$$-100 \quad | \quad 20$$
$$\overline{13}$$
$$-5 \quad | \quad 1$$
$$\overline{8}$$
$$-5 \quad | \quad 1$$
$$\overline{3} \quad | \quad \text{quotient: 92}$$

remainder

(c) Standard or Traditional

$$\begin{array}{r} 92 \\ 5 \overline{)463} \\ 45 \\ \hline 13 \\ 10 \\ \hline 3 \end{array}$$

92 r 3

while this is equivalent to $92\frac{3}{5}$ and 92.6, we are emphasizing whole number division with the quotient and remainder.