Math 65 8-21-13

1.2

(77) $7a + 35b$

$7 \cdot a + 7 \cdot 5b$

$= 7 \cdot (a + 5b)$

$\frac{35}{7} = 5$

(79.) $44x + 11y + 22z$

$= 4 \cdot 11 \cdot x + 11 \cdot y + 2 \cdot 11 \cdot z$

$\frac{44}{11} = 4$

$\frac{22}{11} = 2$

$= 11 \cdot (4x + y + 2z)$

(81.) $5n = 5 \cdot n$

List: 5, n (factors)

(83.) $3(x+y)$

$= 3 \cdot (x+y)$

LIST Factor

3

$(x+y)$

(85.) $7a \cdot b$

LIST

7

a

b

(87.) $(a-b) \cdot (x-y)$

LIST

$(a-b)$

$(x-y)$

8-21-13 (3

1.3

GRID

EX		Problem
1	→	15, 18, 5, 9
2	→	5, 9, 7
3	→	19, 2, 21
4	→	53, 55
5	→	73
6	→	Read
7	→	35, 43, 47
8	→	39
9	→	63, 57
10	→	59
11	→	67, 55, 73, 71, 81

L3

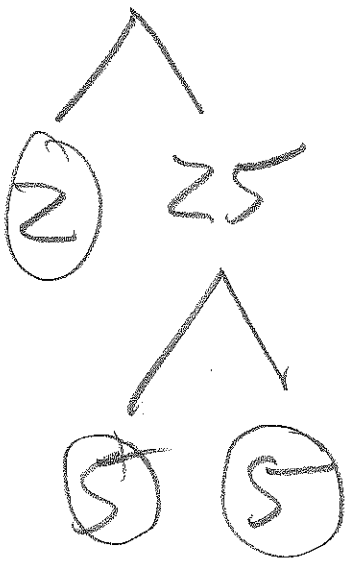
(15)

50 = 2·25, 5·10, 50·1
2 factor factorizations

• prime numbers are only factored into 1 and itself. 2, 3, 5, 7, 11, ...

prime factorization:

50



50 = 2·5·5
prime factorization

LIST ALL FACTORS:

50 = 50·1
25 = 5·5
10 = 2·5
5
2
1

(5

(18.) $60 = 2 \cdot 30$

$= 20 \cdot 3$

$= 60 \cdot 1$

2 factors each:

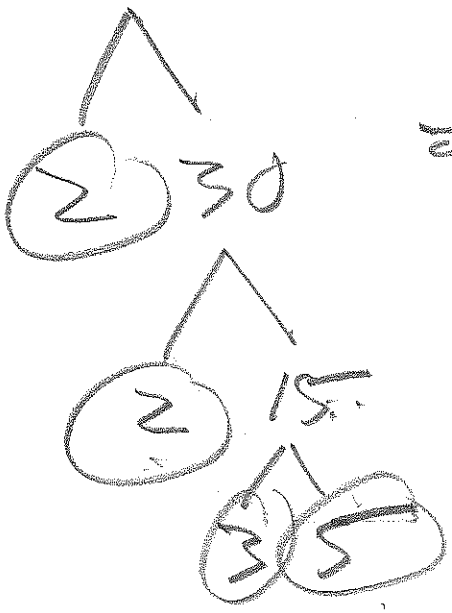
$= 10 \cdot 6$

$= 15 \cdot 4$

$= 12 \cdot 5$

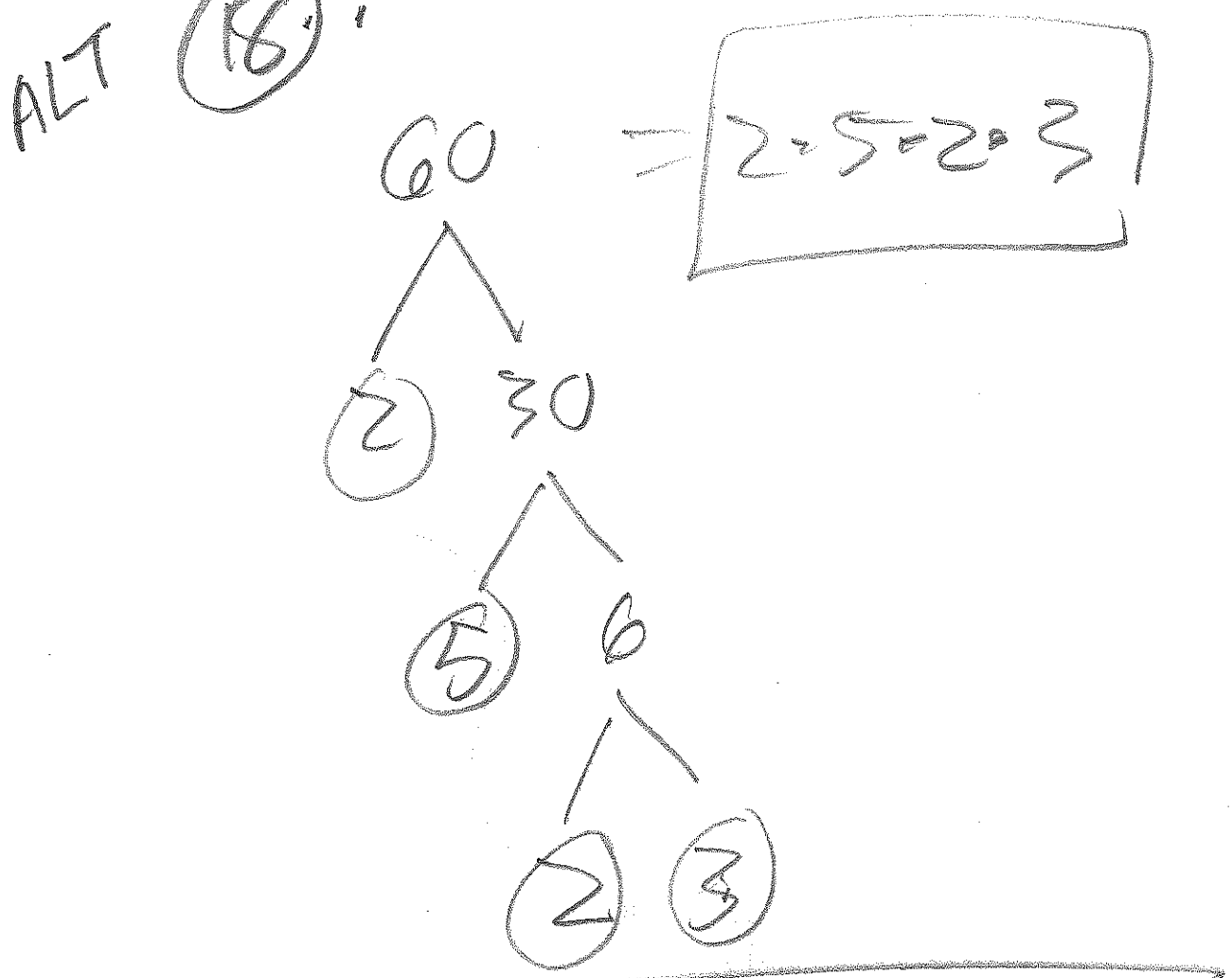
PRIME factorization:

$60 = 2 \cdot 2 \cdot 3 \cdot 5$



$= 2 \cdot 2 \cdot 3 \cdot 5$

ALT (18).



(5.) 9 NOT PRIME

$9 = 3 \cdot 3$ composite

common: 1 is neither
0 is neither

composite: factor into primes

(7

(9.) $77 = 7 \cdot 11$ (prime factorization)

composite

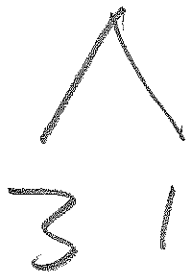
(7.) $41 = 1 \cdot 41$

prime

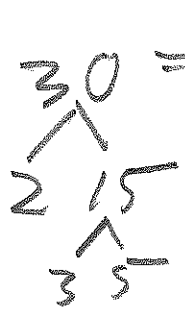
"trick": $51 = 3 \cdot 17$

composite!

(19.) $39 = 3 \cdot 13$ composite



(21.) $30 = 2 \cdot 3 \cdot 5$



$30 = 5 \cdot 2 \cdot 3$

(51.) $210 = 7 \cdot 3 \cdot 2 \cdot 5$

$21 \cdot 10$

$7 \cdot 3 \cdot 2 \cdot 5$

(52.) $\frac{1}{2} \cdot \frac{3}{5} = \frac{1 \cdot 3}{2 \cdot 5} = \boxed{\frac{3}{10}}$

(53.) $\frac{9}{2} \cdot \frac{4}{3} = \frac{9 \cdot 4}{2 \cdot 3} = \frac{36}{6}$

$\frac{36}{6} = \frac{6 \cdot 6}{6} = \frac{6}{1} = \boxed{6}$ LOWEST TERMS

$6 \overline{)36}$

$\underline{36}$

0

(54.) $\frac{2}{6} \div \frac{3}{5}$

$= \frac{2}{6} \cdot \frac{5}{3} = \frac{10}{18}$ LOWEST TERMS

(13) $\frac{35}{18}$ NOT SIMPLIFIABLE.

SIMPLE. (LOWEST TERMS)

EX 6: $\frac{4}{5} = \frac{4}{5} \cdot \frac{6}{6}$

$\frac{4}{5} = \frac{4}{5} \cdot 1 = \frac{4}{5} \cdot \frac{6}{6} = \frac{4 \cdot 6}{5 \cdot 6} = \frac{24}{30}$

ALT: $\frac{4}{5} \cdot 1 = \frac{4}{5} \cdot \frac{7}{7} = \frac{28}{35}$

HIGHER TERMS

(35) $\frac{21}{35} = \frac{3 \cdot 7}{5 \cdot 7} = \frac{3}{5}$ LOWEST TERMS

tip: factor into primes, cancel.

(43.) $\frac{19}{76} = \frac{19}{4 \cdot 19} = \frac{1}{4}$

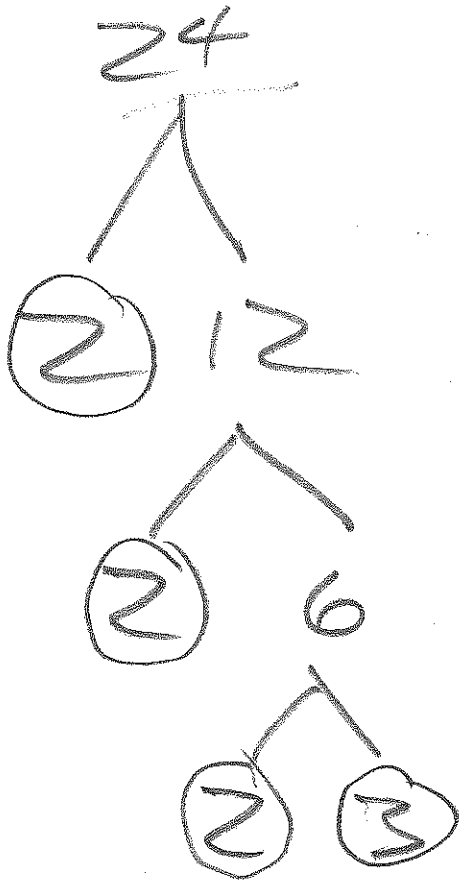
IF $\frac{19}{61} = \frac{\text{PRIME}}{\text{PRIME}}$ SIMPLEST

(47.) $\frac{42}{50} = \frac{2 \cdot 21}{2 \cdot 25} = \frac{2 \cdot 3 \cdot 7}{2 \cdot 5 \cdot 5}$

$= \frac{21}{25}$ LOWEST TERMS

(59) $\frac{12}{48} = \frac{2 \cdot 6}{2 \cdot 24} = \frac{2 \cdot 3 \cdot 2}{2 \cdot 2 \cdot 2 \cdot 3}$

$= \frac{1}{4}$



ALT: $\frac{12}{4 \cdot 12}$

$= \frac{1}{4}$

(60) $\frac{4}{n} + \frac{6}{n} = \frac{4+6}{n}$

$= \frac{10}{n}$

(57) $\frac{1}{8} + \frac{3}{8} = \frac{1+3}{8} = \frac{4}{8}$

$= \frac{2 \cdot 2}{2 \cdot 4} = \frac{\cancel{2} \cdot 2}{\cancel{2} \cdot 4 \cdot 2} = \frac{1}{2}$

ALT: $\frac{4}{8} = \frac{\cancel{4}}{\cancel{2} \cdot 4} = \frac{1}{2}$

(59) $\frac{4}{9} + \frac{13}{18}$ INDEX: LCD = 18, LCM = 18

$\frac{18}{9} = 2$

$\frac{18}{18} = 1$

$\frac{4}{9} \cdot \frac{2}{2} + \frac{13}{18} \cdot \frac{1}{1}$

$= \frac{8}{18} + \frac{13}{18} = \frac{8+13}{18}$

(59.) $\frac{8+13}{18} = \boxed{\frac{21}{18}}$ main answer

SIMPLIFY

$\frac{21}{18} = \frac{3 \cdot 7}{3 \cdot 6} = \frac{7}{6}$

ALT: $\frac{21}{18} = \frac{3 \cdot 7}{3 \cdot 3 \cdot 2} = \frac{7}{3 \cdot 2} = \frac{7}{6}$

ALT: $\frac{21}{18} = \frac{21 \div 3}{18 \div 3} = \frac{7}{6}$ LOWEST TERMS

(67.) $\frac{11}{7} - \frac{4}{7} = \frac{11-4}{7} = \frac{7}{7} = 1$

(60.) $\frac{11}{12} \cdot \frac{12}{11} = \frac{11 \cdot 12}{12 \cdot 11} = 1$

$\frac{11}{12} \cdot \frac{12}{11} = 1$

(55) $\frac{9}{2} \cdot \frac{4}{3} = \frac{9 \cdot 4}{2 \cdot 3}$

$= \frac{36}{6} = 6$

$\frac{36}{6} = \frac{6 \cdot 6}{6} = 6$

ALT. $\frac{3}{2}\frac{9}{} \cdot \frac{4^{2}}{3_{1}} = \frac{6}{1} = \boxed{6}$

f.f.

(77.) $12 \div \frac{4}{9}$

student work $\frac{12}{1} \cdot \frac{9}{4} = \frac{108}{4} = 27$

$4\overline{)108}$ $\quad 27$

$\underline{8}$

28

$\boxed{\frac{108}{4} = \frac{2 \cdot 54}{4_{2}} = 27}$ ALT

(7.) $\frac{20}{30} - \frac{2}{3} \cdot \left(\frac{10}{10}\right)$

student work: $\frac{20}{30} - \frac{20}{20} = 0$

→ Translation:

$$\frac{20}{30} - \frac{2}{3} \cdot \frac{10}{10}$$

$$= \frac{20}{30} - \frac{20}{30} = 0$$

ALT. problem

$$\frac{20}{30} - \frac{1}{3} \qquad LCD = 30$$

$$\frac{20}{30} \cdot \frac{1}{1} - \frac{1}{3} \cdot \frac{10}{10} = \frac{20}{30} - \frac{10}{30}$$

$$= \frac{10}{30}$$

$$= \frac{1}{3}$$

$\frac{20}{20} = 1$

$\frac{20}{3} = 10$

8-21-13

(16

(8)

$$\frac{\frac{2}{7}}{\frac{5}{3}} \div$$

$$= \frac{2}{7} \div \frac{5}{3} = \frac{2}{7} \cdot \frac{3}{5}$$

$$= \frac{6}{35}$$

4 minute Break

See 1.4

Ex	problem
1	→ 11, 13
2	→ 19, 21, 23
3	→ 25, 27
4	→ 31
5	→ 37

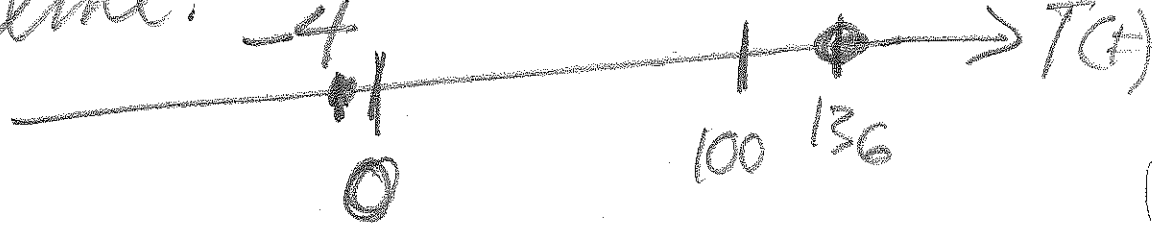
(17

(11)

+136,

−4

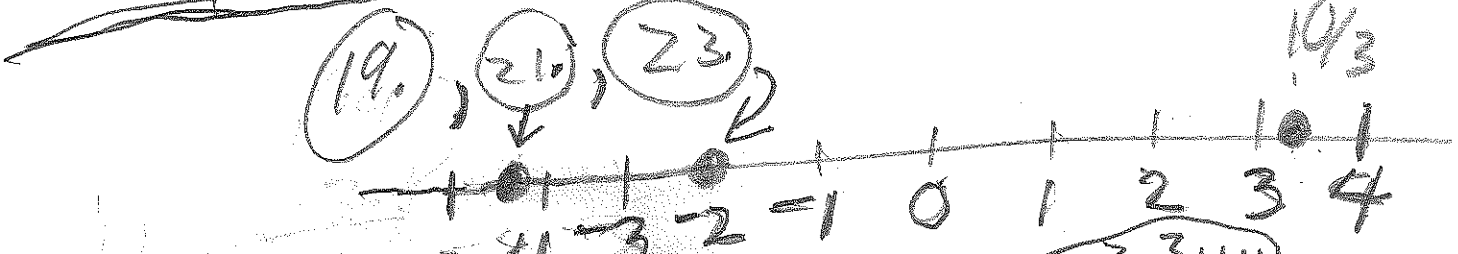
end: −4



(13) −554 = change (loss)

+499.19 = change (gain)

(19.), (21.), (23.)



(19.) → 10/3 → 3.3111...
3 | 10.0
−9
10

C 8

25. $\frac{7}{8} = 0.875$

$$
\begin{array}{r}
0.875 \\
8\overline{)7.000} \\
-\,64 \\
\hline
60 \\
-\,56 \\
\hline
40
\end{array}
$$