

# Study Link 7.1

①

Exponential Notation	Base	Exponent	Repeated Factors	Standard Notation
$9^3$	9	3	$9 \times 9 \times 9$	729
$4^5$	4	5	$4 \times 4 \times 4 \times 4 \times 4$	1,024
$7^4$	7	4	$7 \times 7 \times 7 \times 7$	2,401
$10^6$	10	6	$10 \times 10 \times 10 \times 10 \times 10 \times 10$	1,000,000
$4^9$	4	9	$4 \times 4 \times 4 \times 4 \times 4 \times 4 \times 4 \times 4 \times 4$	262,144

②  $6^3 = 6 + 3 = 9$

Mistake:  $6^3 = 6 \times 6 \times 6$

Correct Solution: 216

③  $2^9 = 9 + 9 = 18$

Mistake  $2^9 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$

Correct Solution: 512

④  $4^7 = 4 \times 7 = 28$

Mistake  $4^7 = 4 \times 4 \times 4 \times 4 \times 4 \times 4 \times 4$

Correct Solution = 16,384

Practice

$$\begin{array}{r} 366.52 \\ - 351.82 \\ \hline 14.70 \end{array}$$

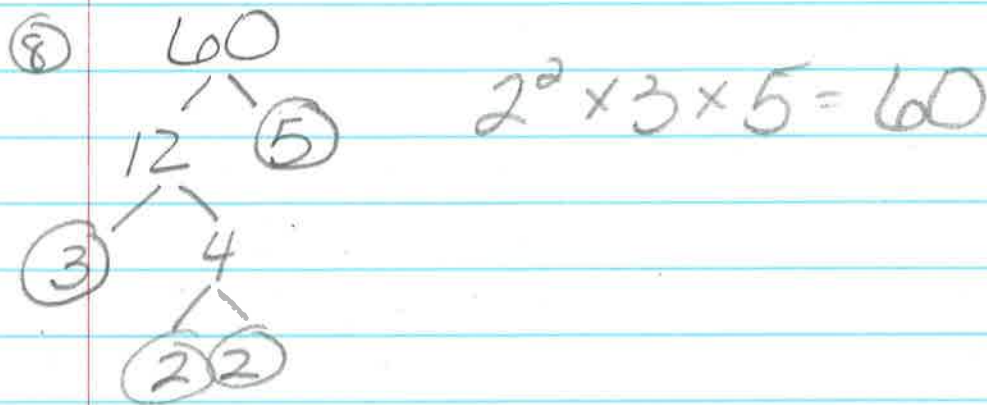
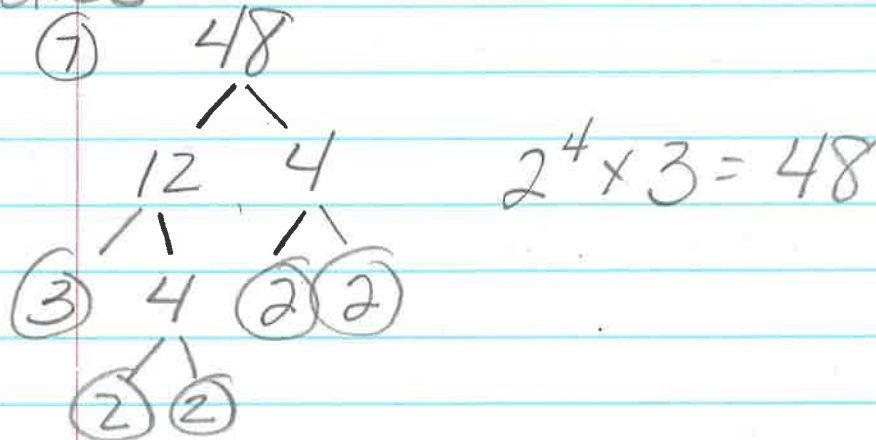
$$\begin{array}{r} 0.999 \\ \cancel{100.00} \\ - 99.52 \\ \hline 0.48 \end{array}$$

⑦  $\frac{19}{7} - \frac{4}{7} = \frac{15}{7} = 2\frac{1}{7}$

## Study Link 7.2

- ① billion    ②  $10^3$     ③ trillion  
④  $10^6$     ⑤ thousand or  $10^3$   
⑥ million or  $10^6$

## Practice



⑨  $3,000 + 200 + 60 + 4$

⑩  $600,000 + 70,000 + 5,000 + 500 + 10 + 1$

# Study Link 7.3

- ① 600      3
- ② 6
- ③ 500 million
- ④ 260 million
- ⑤ 10 million

Practice

$$\begin{aligned} \textcircled{6} \quad & 5 \times (3^2 + 4^2) \\ & 5 \times (9 + 16) \\ & 5 \times 25 \\ & 125 \end{aligned}$$

$$\begin{aligned} \textcircled{7} \quad & 3 \times (9 + 16) \\ & 3 \times 25 \\ & 75 \end{aligned}$$

$$\begin{aligned} \textcircled{8} \quad & \frac{2 \times (9 + h) = 20}{2} \\ & 9 + h = 10 \\ & h = 10 - 9 \\ & h = 1 \end{aligned}$$

$$\begin{aligned} \textcircled{9} \quad & g = (7^2 - 2^2) \\ & g = (49 - 4) \\ & g = 45 \end{aligned}$$

## Study Link 7.4

①  $2 = (3 \times 2) - (4/1)$

②  $3 = (4 + 3 - 1) / 2$

③  $4 = (3 - 1) + (4/2)$

④

$$\begin{aligned} & (9 \times 1) - (1/1) \\ & (9 - 5) + (2 \times 2) \\ & (0.5/1) + (2.5 \times 3) \\ & (6.3 + 9.7) / (6 - 4) \\ & (6.2/2) + (7 - 2.1) \\ & (1/2 \times 8) + (9 - 5) \\ & (7^2 - 9) \div 5 \\ & (4^2 - (3 \times 3)) + 1 \\ & ((2 + 1)^4 - 9) - 1 \end{aligned}$$

④ & ⑦ Answers will vary

⑤  $1 = ((4 + 1) - 3) / 2$

⑥  $7 = ((4 \times 3) / 2) + 1$

⑧  $2 \frac{5}{12} = (1 \frac{1}{12} + a)$

⑨  $(1 \frac{1}{2} + p) \times 2^2 = 12$

$$\begin{array}{r} 2 \frac{5}{12} \\ - 1 \frac{1}{12} \\ \hline \end{array}$$

$$1 \frac{4}{12} = a$$

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

$$1 \frac{1}{2} + p = \frac{12}{4}$$

$$1 \frac{1}{2} + p = 3$$

$$p = 3 - 1 \frac{1}{2}$$

$$p = 1 \frac{1}{2}$$

$$\textcircled{10} \quad 6\frac{5}{8} + d = 7\frac{15}{8}$$

$$d = 7\frac{15}{8} - 6\frac{5}{8}$$

$$d = 1\frac{\textcircled{10}}{8} = 1\frac{2}{8} = 1\frac{1}{4}$$

$$d = 2\frac{1}{4}$$

$$\textcircled{11} \quad 6.4 - y = 6\frac{2}{5}$$

$$6\overset{\downarrow 4}{\frac{4}{10}} - y = 6\frac{2}{5}$$

$$6\overset{\downarrow 1}{\frac{2}{5}} - y = 6\frac{2}{5}$$

$$y = 0$$

# Study Link 7.5

①  $4 + 5 \times 6$   
 $4 + 30 = 34$

②  $(2+3)^2$   
 $(5)^2 = 25$

③  $12 \div 2 + 8 \div 2$   
 $6 + 4 = 10$

④  $115 - 10^2 + 3 \times 5$   
 $115 - 100 + 15 = 30$

⑤  $6 \times (3 + 2^2) \div 2$   
 $6 \times (3 + 4) \div 2$   
 $6 \times 7 \div 2$   
 $6 \times 3.5 = 21.0$

⑥  $7 + 9 \times 7 \div 3$   
 $7 + 63 \div 3$   
 $7 + 21$   
 $28$

⑦ F  
 Multiply 1st

⑧ T

⑨ T

⑩ T

⑪ F  
 Multiply 1st

⑫ T

⑬ F Divide 1st

⑭ T

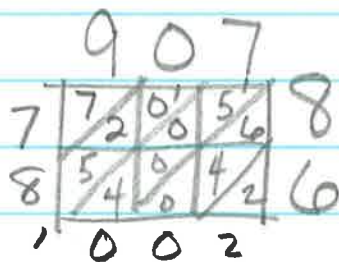
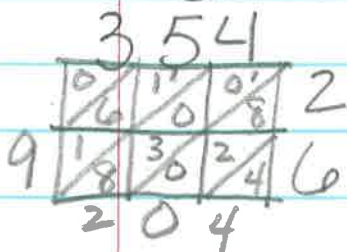
⑰ 
$$\begin{array}{r} 2.9 \\ 3.000 \\ -1.75 \\ \hline 1.250 \end{array}$$
  
 $S = 1.250$

## Practice

⑮ 
$$\begin{array}{r} 312 \\ 354 \\ \underline{26} \\ 2124 \\ 7080 \\ \hline 9204 = 2 \end{array}$$

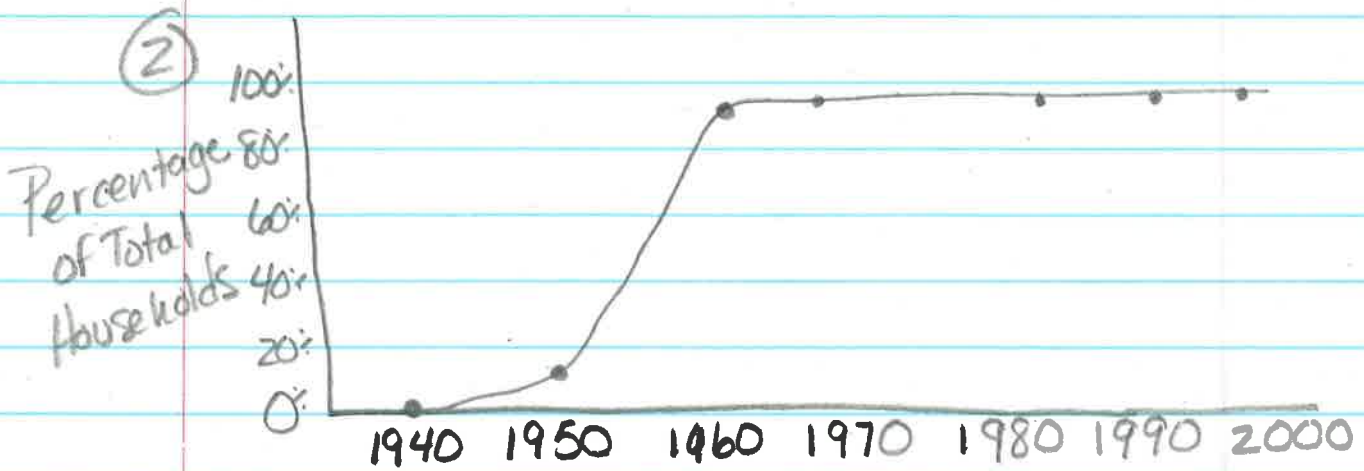
⑯ 
$$\begin{array}{r} 907 \\ \times 86 \\ \hline 5442 \\ 72560 \\ \hline 78002 = r \end{array}$$

⑱ 
$$\begin{array}{r} 0.006 \\ 3.2 \\ 0.75 \\ \hline 4.00 \\ \hline h = 7.956 \end{array}$$



## Study Link 7.6

① Sales were at their highest in 1930. Sales dropped by 60 million from 1940 to 1970.



③ Before televisions people went to the movies.

# Study Link 7.7

①  $2.00 - 3.00 = 2.60$       ②  $1.50 - 2.00 = 1.58$

Sample answers

③  $-5.00 - -6.00 = -5.50$       ④  $-9.50 - -10.00 = -9.80$

⑤  $5\frac{1}{4} = 5.25$   
 $3.8$   
 $-1.2$   
 $-1$   
 $5\frac{3}{8} = 5.375$        $-1.2, -1, 3.8, 5\frac{1}{4}, 5\frac{3}{8}$

⑥  $-6$   
 $-4\frac{1}{2}$   
 $-0.5$   
 $-7$   
 $0$        $-7, -6, -4\frac{1}{2}, -0.5, 0$

- ⑦ F      ⑧ F      ⑨ T      ⑩ T

Positive Number

$5\frac{1}{2} = \frac{3}{6}$   
 They're Equal

Sample Answers  
 ⑪  $-1 < 1$  True  
 ⑫  $-5 = \frac{500}{100}$  False



$$\begin{array}{r} \phantom{0}49 \\ \times 0500 \\ \hline 92.47 \\ \hline 12.53 = f \end{array}$$

$$\begin{array}{r} 32 \\ 15 \\ 25 \\ 8 \\ \hline + 8 \\ \hline 10^2 = 100 \end{array} \quad \begin{array}{r} 40 \\ 40 \\ \hline 100 \\ - 40 \\ - 40 \\ \hline 5 = 20 \end{array}$$

$$(15) \quad 4\frac{3}{12} + n = 5$$

$$5 = 4\frac{12}{12}$$

$$- 4\frac{3}{12}$$

$$\hline 9/12 \div 3 = 3/4$$

$$(16) \quad 4\frac{3}{12} - r = 3\frac{6}{12}$$

||

$$\frac{51}{12} - \frac{42}{12} = \frac{9}{12} - \frac{3}{4} = r$$

## 7.8 Study Link

①  $<$     ②  $>$     ③  $>$     ④  $>$

⑤  $7 + -9 = -2$

⑥  $14 + -9 = 5$

⑦  $-9$

⑧  $12$

⑨  $-88$

⑩  $70$

⑪  $3$

⑫  $0$

IN	out
25	0
50	25
-25	-50
-100	-125
100	75
0	-25

### Practice

⑭  $3\frac{2}{3} = \frac{11}{3}$

Take the bottom  $\times$  the whole,  
& add the top  $3 \times 3 = 9 + 2 = 11$

⑮  $7\frac{9}{3} = \frac{30}{3}$

$3 \times 7 = 21 + 9 = 30$

⑯  $\frac{19}{25} \times \frac{3}{3} = \frac{57}{75}$

⑰  $\frac{75}{100} \div \frac{5}{5} = \frac{15}{20}$



## Study Link 7.10

①  $<$     ②  $>$     ③  $>$     ④  $>$

⑤  $>$     ⑥  $>$     ⑦  $-5$     ⑧  $-21$

⑨  $4$     ⑩  $-6$     ⑪  $-11$     ⑫  $-26$

⑬  $5 - (-11) = 16$     ⑭  $-4$     ⑮  $\checkmark$     ⑯  $\checkmark$

⑰  $(-2 + 3) \times 4 = 4$     ⑱  $\checkmark$

⑲  $-3 + 5 * (2 - (-6)) = 37$     ⑳  $4^2 + (((-3) - (-5) \times 2) = 20$

⑳ 9:10 she arrived

20 the race begins

9:30

24 to complete the race

9:54

10 minutes to cool down

a) 10:04

b)



(22)  $8 \overline{) 1057} R7$  or  $1057\frac{7}{8} = V$

$$\begin{array}{r} 1057 \\ -8 \downarrow \\ \hline 04 \\ -0 \downarrow \\ \hline 46 \\ 40 \\ \hline 563 \\ -56 \\ \hline 7 \end{array}$$

(23)  $7 \overline{) 137} R4$  or  $137\frac{4}{7} = K$

$$\begin{array}{r} 137 \\ -7 \downarrow \\ \hline 26 \\ 21 \\ \hline 483 \\ -49 \\ \hline 4 \end{array}$$