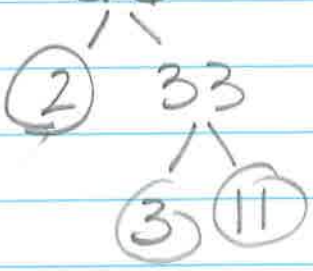
Study Link 12.1

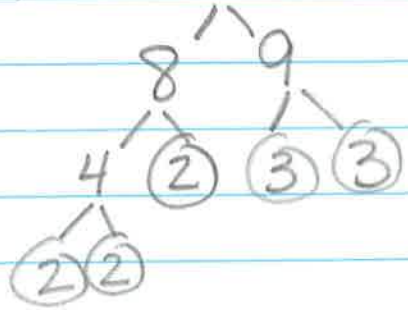
Sample answers

a 66



$2 \times 3 \times 11 = 66$

b 72



$2 \times 2 \times 2 \times 3 \times 3 = 72$

(2) a $\frac{20 \div 2}{66 \div 2} = \frac{10}{33}$ b $\frac{66 \div 6}{72 \div 6} = \frac{11}{12}$ c $\frac{20 \div 4}{72 \div 4} = \frac{5}{18}$

(4) a $32 = 2 \times 2 \times 2 \times 2 \times 2$

b $49 = 7 \times 7$

(5) $\frac{150 \div 25}{225 \div 25} = \frac{6 \div 3}{9 \div 3} = \frac{2}{3}$

Practice

(6) $\frac{1}{4} \times \frac{36}{1} = \frac{36}{4} = 9$

(7) 360×0.25

1800

$+7200$

90.00

or $\frac{360}{1} \times \frac{1}{4} = \frac{360}{4} = 90$

(8) $\frac{1}{3} \times \frac{90}{1} = \frac{90}{3} = 30$

(9) $33\frac{1}{3}\% = \frac{1}{3}$

$\frac{1}{3} \times \frac{90}{1} = \frac{90}{3} = 30$

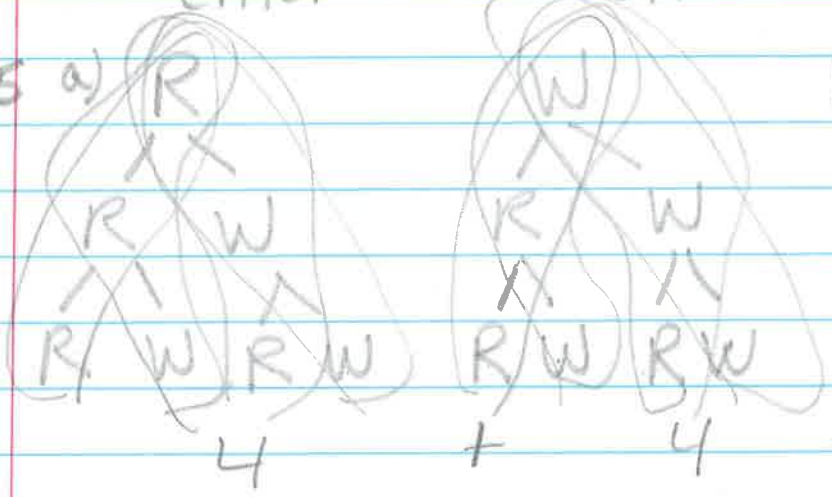
Study Link 12.2

① 5 ways to enter (A, B, C, X, Y) × 5 ways to exit = 25

② A → A B C X Y; B → A B C X Y; C → A B C X Y; X → A B C X Y; Y → A B C D X Y

③ No some gates will be used more than others

④ 5 ways to enter × 4 ways to exit = 20 ways

5 a) 

b) $\frac{1}{8}$

Study Link 12.3

① Sixteen out of twenty-five

② 16/25

③ $16/25 \times 4 = \frac{64}{100} = 64\%$

④ 16:25

⑤ 23:50 ≈ 0.46

⑥ 2/3, 6:9, $66\frac{2}{3}$

⑦ 7 out of 8 ≈ 35:40

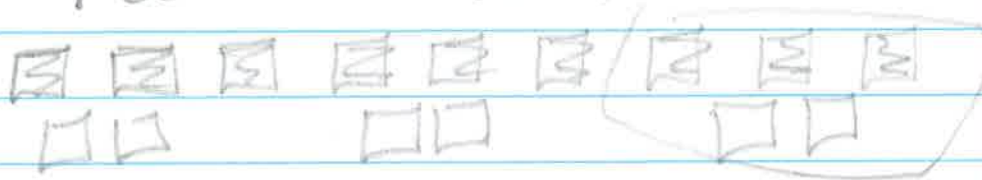
Study Link 12.4

(1)

2:10

4 white 16 shaded

(2)



$\frac{2}{5}$

15 total tiles

(3) $\frac{\boxed{16}}{48}$ $\frac{4 \times 4}{4 \times 12}$

(4) $\frac{2}{3} = \frac{\boxed{16}}{24}$ Have scored

24-16=8 have not scored

(5) $\frac{3 \times 4}{8 \times 4}$ $\frac{12}{32}$ Tests

Practice

(6)

```
     98 R38
92 ) 9054
     828
      774
      736
       38
```

(7)

(8)

```
  90.16
+  0.38
  90.54
```

(9) $10^2 = 100$

$90.54 \times 100 = 9{,}054$

Study Link 12.5

① $\frac{1}{5} \times \frac{8}{8} = \frac{8}{40}$

② $\frac{2}{3} \times \frac{8}{8} \frac{16}{24}$

③ $\frac{5}{6} \times \frac{7}{7} \frac{45}{54}$

④ $\frac{1}{4} \times \frac{15}{15} \frac{15}{60}$

⑤ $\frac{5}{8} \times \frac{4}{4} \frac{20}{32}$

⑥ $\frac{13}{50} \times \frac{2}{2} \frac{26}{100}$

⑦ $\frac{2}{5} \times \frac{23}{23} \frac{46}{115}$

⑧ $\frac{3}{4} \times \frac{39}{39} \frac{117}{156}$

⑨ $\frac{1.50}{3} \times \frac{30}{30} \frac{45}{90}$

⑩ $360 \div 4 = 90$

$\frac{30}{100} \times \frac{3}{3} \frac{90}{100}$

Practice ⑪ $6 \times 6 \times 6 = 36$

$\times 6$

216

⑫ $3 \times 3 \times 3 \times 3 \times 3 \times 3$

$9 \times 9 \times 9$

$81 \times 9 = 729$

⑬ $10^2 = 100$

$6^3 = \times 216$

21600

Study Link 12.6

(1) a. 81,000 | 108,000 | 135,000

b. 270,000 (27,000 x 10)

(2) a 50 | 75 | 100 | 125

b. 0.42 miles

$$\begin{array}{r} 41\ 40/60 \\ 60\,\overline{)25.00} \\ -240 \\ \hline 100 \\ 60 \\ \hline 40 \end{array}$$

(3) 50 x 20 = 1,000 gallons

(4)

$$\begin{array}{r} 186 \\ \times\ \ 5 \\ \hline 930 \end{array}$$ days

(5) $1\frac{1}{2} \times 5 = \frac{5}{2} \times \frac{5}{1} = \frac{25}{2} = 12\frac{1}{2}$

Study 12.7

(1)

5 ft 9 10. ½ 2/4 + 4/4 = 6/4

− 5 ft 6 3/4

3 3/4 inches more

(2)

$3\ 4\frac{3}{3}$

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

1 2/3 hrs

(3)

49 50 4/4

− 48 ¼

1 3/4 lbs

(4) $1 - \frac{9}{10} = \frac{1}{10}$

(5) 7yds = 21 ft

20 11

21 12 8/8

− 19 ft 3⅛

1ft 8 7/8 inches

12 inches + 8 + 7/8 = 20 7/8 inches

⑥ $5\frac{4}{5} \times 6 = \frac{29}{5} \times \frac{6}{1} = \frac{174}{5} = 34\frac{4}{5}$ m

⑦ $16\frac{4}{5} \times 3 = \frac{84}{5} \times \frac{3}{1} = \frac{252}{5} = 50\frac{2}{5}$ kg

Practice ⑧ $4 \times 4 = 16 + 1 = 17$

⑨ $4!(24) + 4 + 4 + \sqrt{4}(2) = 34$

⑩ $\frac{3}{4}$ of $12 = 9$

⑪ $\frac{1}{2}$ of $360 = 180$

Study Link 12.8

① a $250 \times 5 = 1{,}250$ eggs

$\frac{250}{1} \times \frac{1}{12} = \frac{250}{12} = 20\frac{10}{12}$

About 21 eggs

② $8 \times 3 = 24$ 80 lunches

③ a $\frac{1}{4}$ $\frac{424}{1} = \frac{424}{4} = 106$ clams

b $2\frac{1}{2} = \frac{5}{2} \times \frac{424}{1} = \frac{2120}{2} = 1060$ clams

④ a) 1 to 1

b) 26 to 104 (Remember 2 decks)

c 8 to 16

Practice

⑤ $3\frac{4}{7} \times \frac{8}{8} = 3\frac{4}{7}$

⑥ $3n + 2n = 25$

$5n = 25$

$n = 5$

⑦ $25 = 2n$

$12.5 = n$

⑧ $12.5 \times n = 100$

$12\frac{1}{2} \times n = 100$

$n = \frac{100}{1} \times \frac{2}{25} = \frac{200}{25} = 8$