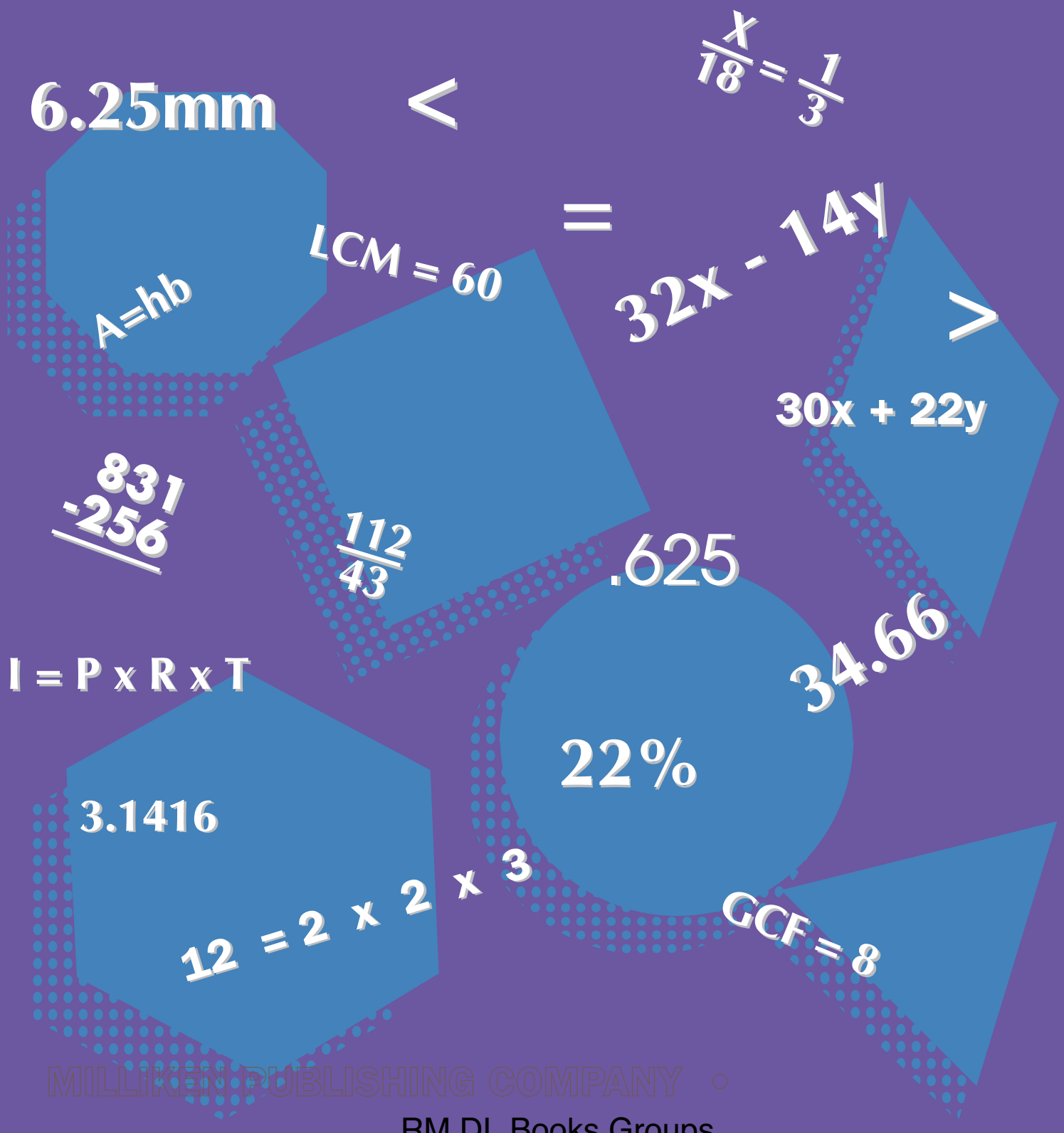
EMP4054i

MATH WORKBOOK 7



Math WORKBOOK 7

Finally, a new workbook for seventh grade math!

Basic skills are reviewed and expanded as students work through 58 pages of activities. Each page gives an example and step–by–step solution of the problem presented. Some of the many skills covered include a review of addition, subtraction, multiplication, and division, plus challenges in decimal fractions, exponential and scientific notation, primes, probability, percents, and basic geometric principles. Six answer pages are provided.

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Find each sum.

425 + 325 + 550 =

150 + 200 + 425 =

325 + 450 + 175 =

1250 + 375 + 250 =

310 + 420 + 1270 =

2550 + 320 + 430 =

8220 + 1210 + 970 =

275 + 450 + 1275 =

150 + 250 + 3450 =

8240 + 3510 + 450 =

3450 + 1250 + 375 =

1230 + 450 + 6720 =

1315 + 1485 + 250 =

9150 + 450 + 370 =

1235 + 1215 + 150 =

Addition (three and four-digit addends)

320 + 1450 + 230 = 2000

```
 1749
  281
  362
+ 4567
 6959
```

546 892 + 352	3456 123 + 4567	5678 5687 + 5692	248 652 + 632	259 1231 + 5678
1234 5678 + 9018	2468 1357 + 1234	247 1359 + 9994	9999 8888 + 7777	1111 3333 + 7777
6008 002 + 5005	2080 424 + 6586	5550 5050 + 5005	1991 2882 + 3773	1357 8023 + 4690

Find each difference (mentally).

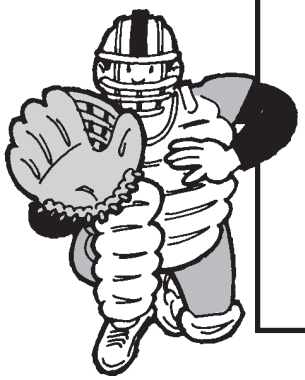
658 – 236 =

892 – 451 =

750 – 240 =

685 – 455 =

899 – 377 =



Subtraction of large numbers

$$\begin{array}{r} 299 \\ 3000 \\ -\ 1235 \\ \hline 1765 \end{array} \qquad \begin{array}{r} 712 \\ 831 \\ -\ 258 \\ \hline 573 \end{array}$$

cancelling and carrying

8246 – 3123 =

9876 – 5432 =

6812 – 4701 =

6425 – 5314 =

8048 – 6040 =

5489 – 3157 =

8240 – 6130 =

8613 – 8002 =

8249 – 1111 =

9753 – 8642 =

Find each difference.

8000 – 4567	6782 – 4998	3451 – 2506	2561 – 2489	3040 – 1826
5043 – 2879	3424 – 1567	1234 – 456	8405 – 2600	6500 – 4305
6000 – 1358	4200 – 2845	1050 – 879	5060 – 4699	7329 – 5638

Find each product (mentally).

$2 \times 100 \times 8 =$

$6 \times 100 \times 5 =$

$7 \times 1000 \times 8 =$

$12 \times 1000 \times 3 =$

$20 \times 1000 \times 6 =$

$30 \times 1000 \times 8 =$

$15 \times 1000 \times 20 =$

$3 \times 2000 \times 4 =$

$5 \times 3000 \times 2 =$

$9 \times 800 \times 100 =$

Mental Multiplication

$4 \times 100 \times 6 = 2400$

$700 \times 8 = 5600$

One, two, and three-digit multipliers

875	123	5603
× 3	× 14	× 50
2625	492	0000
	123	28015
	1722	280,150

$5 \times 1000 \times 40 =$

$3 \times 1000 \times 30 =$

$6 \times 2000 \times 3 =$

$7 \times 4000 \times 10 =$

$8 \times 200 \times 1000 =$

Find each product.

305 × 2	468 × 3	581 × 5	689 × 7	892 × 9
560 × 25	321 × 14	602 × 81	842 × 45	678 × 66
321 × 123	562 × 421	890 × 405	689 × 157	425 × 125

Find each quotient (mentally).

2500 ÷ 5 =

3600 ÷ 60 =

900 ÷ 10 =

800 ÷ 20 =

350 ÷ 70 =

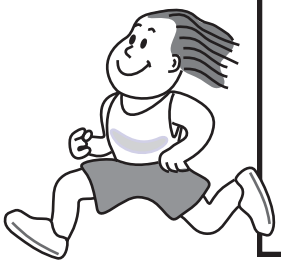
2800 ÷ 40 =

24,000 ÷ 600 =

4200 ÷ 70 =

15,000 ÷ 500 =

18,000 ÷ 100 =



Mental Division

1600 ÷ 40 = 40

9000 ÷ 300 = 30

Quotients with remainders

$$\begin{array}{r} 311 \text{ R7} \\ 15\overline{)4672} \\ \underline{45} \\ 17 \\ \underline{15} \\ 22 \\ \underline{15} \\ 7 \end{array}$$

8100 ÷ 90 =

3200 ÷ 800 =

7200 ÷ 80 =

60,000 ÷ 2000 =

21,000 ÷ 300 =

Find each quotient with remainder.

$4\overline{)2407}$ $5\overline{)3716}$ $8\overline{)1245}$

$9\overline{)1049}$ $24\overline{)3641}$ $35\overline{)2458}$

$91\overline{)9289}$ $85\overline{)6541}$ $135\overline{)12569}$

Write > or < in each ◯ .

2048 ◯ 1468

288 ◯ 301

900,506 ◯ 888,968

64,506 ◯ 8999

304,582 ◯ 4,567,123

304,562 ◯ 304,056

456,008 ◯ 456,800

120,046 ◯ 88,765

212,131 ◯ 221,313

236,468 ◯ 236,486

Comparing whole numbers

468 and 480 — 468 < 480

5005 and 4998 — 5005 > 4998

Ordering from least to greatest

205, 285, 302, 216

205 < 216 < 285 < 302

66,725 ◯ 66,275

77,125 ◯ 71,555

105,065 ◯ 700,000

561,165 ◯ 651,561

490,555 ◯ 501,124

Put numbers in order from least to greatest.

502; 243; 462; 512 : _____ _____ _____ _____

121; 108; 118; 111 : _____ _____ _____ _____

865; 1000; 859; 721 : _____ _____ _____ _____

645; 654; 651; 660 : _____ _____ _____ _____

909; 919; 990; 900 : _____ _____ _____ _____

532; 512; 522; 502 : _____ _____ _____ _____

789; 795; 703; 765 : _____ _____ _____ _____

5835; 5136; 5842 : _____ _____ _____

1004; 1100; 1010 : _____ _____ _____

4586; 4856; 4658 : _____ _____ _____

Round to the nearest 10.

182 →

857 →

763 →

456 →

1451 →

Rounding to the nearest 10

4637 → 4640

Rounding to the nearest 100

4637 → 4600

Rounding to the nearest 1000

4637 → 5000

Round to the nearest 100.

742 _____ 8042 _____ 7345 _____ 6190 _____ 995 _____

123 _____ 568 _____ 1491 _____ 9999 _____ 4111 _____

Round to the nearest 1000.

1258 _____ 6499 _____ 5671 _____ 1085 _____ 5555 _____

8008 _____ 2944 _____ 3299 _____ 5712 _____ 3511 _____

Round to the nearest ten thousand.

42,564 _____ 34,985 _____ 15,432 _____

66,543 _____ 10,499 _____ 28,009 _____

33,456 _____ 78,451 _____

Round to the nearest million.

1,456,784 _____ 3,842,165 _____ 5,064,301 _____

1,742,500 _____ 245,671,234 _____

Estimate each sum.

26 + 39 =

89 + 33 =

41 + 51 =

28 + 32 =

57 + 68 =

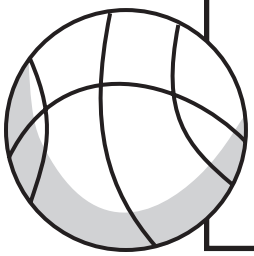
129 + 139 =

751 + 849 =

439 + 521 =

1452 + 3123 =

8670 + 167 =



Estimate by rounding:

67 + 21 ≈ 70 + 20 = 90

142 – 28 ≈ 140 – 30 = 110

899 + 642 =

292 + 353 =

728 + 862 =

2598 + 3788 =

385 + 4621 =

Estimate each difference.

89 – 41 =	62 – 29 =	48 – 22 =
31 – 19 =	56 – 28 =	77 – 43 =
128 – 21 =	267 – 149 =	508 – 409 =
485 – 68 =	721 – 139 =	241 – 189 =

Estimate total by rounding to the nearest 10.

89 – 42 + 56 – 37 + 48 + 77 – 21 =

126 – 19 + 459 – 68 + 46 + 37 – 24 =

Estimate each product.

$895 \times 39 =$

$709 \times 21 =$

$267 \times 34 =$

$542 \times 58 =$

$89 \times 99 =$

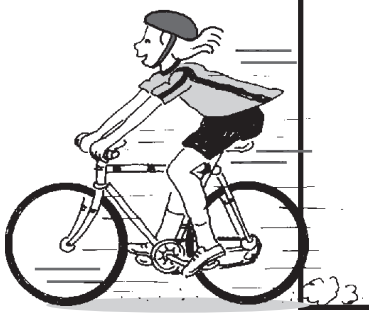
$409 \times 59 =$

$159 \times 96 =$

$975 \times 18 =$

$816 \times 57 =$

$892 \times 199 =$



Estimate by rounding to 1-digit accuracy:

$$\begin{array}{rcr} 691 & \rightarrow & 700 \\ \times\ 49 & \rightarrow & \times\ 50 \\ & & 35{,}000 \end{array}$$

$2187 \div 54 \rightarrow 2000 \div 50 \approx 40$

$372 \times 19 =$

$612 \times 28 =$

$478 \times 39 =$

$786 \times 87 =$

$686 \times 308 =$

Estimate each quotient.

$3946 \div 49 =$

$369 \div 38 =$

$238 \div 79 =$

$4783 \div 49 =$

$8742 \div 268 =$

$2736 \div 289 =$

$5882 \div 291 =$

$395 \times (621 \div 197) =$

$6047 \div 18 =$

$539 \div 87 =$

$179 \div 59 =$

$7781 \div 371 =$

$1950 \div 190 =$

$3647 \div 187 =$

$6199 \div 307 =$

Write in exponential notation.

$6 \cdot 6 \cdot 6 =$

$7 \cdot 7 \cdot 7 \cdot 7 =$

$2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 =$

$3 \cdot 3 \cdot 3 =$

$5 \cdot 5 \cdot 5 \cdot 5 =$

$7 \cdot 7 \cdot 7 \cdot 7 \cdot 7 =$ $9 \cdot 9 \cdot 9 \cdot 9 =$ $3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 =$

$4 \cdot 4 \cdot 4 \cdot 4 \cdot 4 =$ $8 \cdot 8 \cdot 8 \cdot 8 =$ $9 \cdot 9 \cdot 9 =$

Using exponential notation

$3 \cdot 3 \cdot 3 \cdot 3 = 3^4$

Converting to standard numerals

$5^2 = 5 \cdot 5 = 25$

Write the standard numeral.

$9^2 =$	$3^3 =$	$4^2 =$	$2^5 =$	$1^{10} =$
$10^6 =$	$17^1 =$	$10^2 =$	$30^2 =$	$0^7 =$
$8^3 =$	$6^4 =$	$7^2 =$	$4^4 =$	$8^1 =$

Find each product.

$4 \times 10^3 =$	$6 \times 10^2 =$	$17 \times 10^1 =$
$12 \times 10^4 =$	$3 \times 2^2 =$	$5 \times 3^2 =$
$4 \times 5^2 =$	$7 \times 10^5 =$	$2^2 \times 3^2 =$
$3^3 \times 2^1 =$	$2^4 \times 1^{10} =$	$0^7 \times 1^8 =$
$2^2 \times 5^2 \times 10^3 =$	$10^2 \times 20^2 \times 1^8 =$	$2 \times 3^3 =$

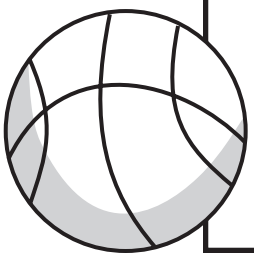
Find each sum.

4.5 + 3.2 + 2.3 =

2.25 + 4.50 + 6.25 =

8 + 3.75 + .25 =

8.2 + 3.8 + 7.1 =



Addition of decimals

14.5 + 7.2 + .003 + 4 =

$$\begin{array}{r} 14.500 \\ 7.200 \\ .003 \\ +\ 4.000 \\ \hline 25.703 \end{array}$$

Find each sum.

.35, .023, .1, and .23	5.2, 6, 7.21, and .4	.009, .4, 2.3, and .42
15.6, 17.23, 8, and .04	12.36, 7.9, 5.1, and .47	3.2, 5.81, .123, and 4.23
6.45, 7.55, 8, and 2.3	7.6, 19.29, 1.46, and 3	.004, 6.007, and 18.23
2.1257, 3.14, 8.1, and 12	5.159, 6.482, and 17.463	5.428, 2.104, and .4052
.4935, 1.258, and 1.5679	4.23, 8.0405, and 7.004	7.469, 8.1, and 25.4694
62.43, 84.49, and 129.451	5.5, .4761, and .04	6.002, .41, and 23.777

Find the difference.

8.4 – 2.3 =

7.2 – 4.2 =

18.25 – 16.25 =

24.95 – 24.70 =

Subtraction of decimals

$$8 - 3.4 = \begin{array}{r} 8.0 \\ -\ 3.4 \\ \hline 4.6 \end{array} \qquad 9.3 - 2 = \begin{array}{r} 9.3 \\ -\ 2.0 \\ \hline 7.3 \end{array}$$

Find the difference.

8.45 – 6.23 =

16.4 – 8.7 =

19.56 – 3.2 =

26.32 – 18 =

17.56 – 6.98 =

4 – 3.256 =

64.38 – 2.485 =

6.34 – 5 =

74 – 36.48 =

37.46 – 16.9 =

18.12 – 12.18 =

13.05 – 2.50 =

Find each product.

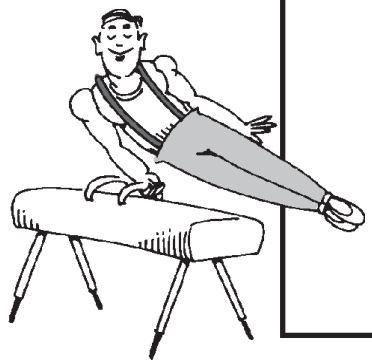
.5 × 2 =

.25 × 4 =

.20 × 5 =

.1 × 10 =

1.5 × 2 =



Multiplication of decimals

$$\begin{array}{r} 3.5 \\ \times\ .2 \\ \hline .70 \end{array} \qquad \begin{array}{r} 12.45 \\ \times\ 5.4 \\ \hline 4980 \\ 6225 \\ \hline 67.230 \end{array}$$

Find each product.

$\begin{array}{r} 2.45 \\ \times\ 8 \end{array}$	$\begin{array}{r} 3.12 \\ \times\ .6 \end{array}$	$\begin{array}{r} 1.23 \\ \times\ .07 \end{array}$	$\begin{array}{r} 14.5 \\ \times\ .005 \end{array}$
$\begin{array}{r} 314 \\ \times\ 2.1 \end{array}$	$\begin{array}{r} 127 \\ \times\ .35 \end{array}$	$\begin{array}{r} 460 \\ \times\ .12 \end{array}$	$\begin{array}{r} 728 \\ \times\ 6.3 \end{array}$
$\begin{array}{r} .23 \\ \times\ .45 \end{array}$	$\begin{array}{r} .99 \\ \times\ .85 \end{array}$	$\begin{array}{r} .08 \\ \times\ .07 \end{array}$	$\begin{array}{r} .75 \\ \times\ .05 \end{array}$
$\begin{array}{r} 2.035 \\ \times\ 5.1 \end{array}$	$\begin{array}{r} 6.007 \\ \times\ 2.13 \end{array}$	$\begin{array}{r} 5.456 \\ \times\ 4.35 \end{array}$	$\begin{array}{r} 8.076 \\ \times\ .009 \end{array}$

Find each quotient.

$.6\overline{).42}$ $.7\overline{)2.8}$

$8\overline{)4.8}$ $5\overline{).25}$

Division with decimals

$$\begin{array}{r} .47 \\ 6\overline{)2.82} \\ \underline{24} \\ 42 \\ \underline{42} \\ 0 \end{array} \qquad \begin{array}{r} 4.7 \\ 6\overline{)2.82} \\ \underline{24} \\ 42 \\ \underline{42} \\ 0 \end{array}$$

$.9\overline{)4.23}$ $.04\overline{)16.48}$ $.002\overline{).0486}$ $.03\overline{)9.612}$

$.24\overline{).0744}$ $.35\overline{)4.2}$ $.21\overline{)5.25}$ $.42\overline{).029}$

$3.5\overline{)15.75}$ $.28\overline{)179.2}$ $1.4\overline{)13.02}$ $4.5\overline{)9}$

$.003\overline{)6}$ $2.15\overline{)17.63}$ $34.5\overline{)796.95}$ $.017\overline{).4012}$

Write > or < in each ◯.

8.4 ◯ 7

3.25 ◯ 4.6

12.004 ◯ 16

3.2 ◯ 1.259

17.456 ◯ 18

1.234 ◯ 12.34

52.407 ◯ 52.047

13.881 ◯ 18.113

62.001 ◯ 62.100

17.123 ◯ 17.321

Comparing decimals

3.57 < 4.1

Ordering decimals from least to greatest

1.19 < 2 < 3.1

89.898 ◯ 89.889

67.414 ◯ 64.714

.0073 ◯ .073

.1205 ◯ .10520

.6113 ◯ .3666

Put numbers in order from least to greatest.

2.05; 2.5; 2.51; 2.15 : _____ _____ _____ _____

12.13; 13.12; 11.23; 12.31 : _____ _____ _____ _____

3.23; 3.32; 2.33; 2.32 : _____ _____ _____ _____

1.45; 1.12; 1.52; 1.05 : _____ _____ _____ _____

10.2; 1.02; 2.10; 2.05 : _____ _____ _____ _____

8.13; 8.75; 8.09; 8.57 : _____ _____ _____ _____

17.02; 1.72; .172; 17.72 : _____ _____ _____ _____

2.58; 2.08; 2.5; 2.85 : _____ _____ _____ _____

11.43; 14.13; 13.44; 11.33 : _____ _____ _____ _____

1.007; 1.707; 1.7; 1.71 : _____ _____ _____ _____

Round to the nearest tenth.

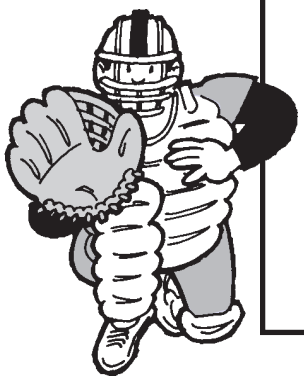
8.57 ≈

16.21 ≈

18.45 ≈

7.37 ≈

29.119 ≈



Rounding to the nearest tenth

4.581 ≈ 4.6

Rounding to the nearest hundredth

16.453 ≈ 16.45

Round to the nearest hundredth.

17.456 ≈	18.412 ≈	19.119 ≈
24.002 ≈	84.991 ≈	16.995 ≈
121.516 ≈	11.084 ≈	8.451 ≈

Round to the nearest thousandth.

6.4567 ≈	19.2051 ≈	38.4219 ≈
145.1111 ≈	8.0505 ≈	17.9999 ≈
8.4545 ≈	62.0009 ≈	9.1717 ≈

Round to the nearest ten-thousandth.

4.15672 ≈	16.52328 ≈	80.80808 ≈
24.56789 ≈	.03215 ≈	1.040506 ≈

Estimate by rounding to the nearest dollar.

$4.35 + $6.14 ≈

$24.37 + $25.89 ≈

$14.50 + $15.08 ≈

$104.27 + $16.12 ≈

$46.99 + $33.15 ≈

Estimating by rounding to the nearest whole number

3.41	→	3
5.715	→	6
16.42	→	16
+ 9.89	→	+ 10
		35

Estimate by rounding to the nearest whole number.

4.56	16.46	27.09	62.9
8.2	82.11	18.94	13.4
+ 7.15	+ 7.4	+ 7.37	+ 3.9

Estimate by rounding to the nearest tenth.

28.571	82.723	102.57	8.45
– 17.01	– 6.191	– 32.487	– 2.54

Estimate by rounding to the nearest hundredth.

12.156	13.991	424.446	8.496
– 7.161	– 4.589	– 204.451	– 3.451

Estimate each product.

$9.1 \times 4.2 =$

$13.6 \times 2.1 =$

$99.5 \times 8.7 =$

$16.23 \times 4.9 =$

$7.314 \times .78 =$

$3.456 \times 9.7 =$

$11.199 \times 7.52 =$

$3.45 \times 2.91 \times 5.1 =$

$8.9 \times .89 \times 2.1 =$

$1.9 \times 99.6 \times 2.19 =$

Estimating products and quotients
by rounding to the nearest whole number

$8.12 \rightarrow 8$
$\times\ 2.9 \rightarrow \times\ 3$
24

$16.1 \div 3.8 \rightarrow 16 \div 4$
$= 4$

$42.149 \times 1.97 =$

$16.416 \times 2.51 =$

$2.12 \times 4.51 \times 3.91 =$

$3.11 \times 5.8 \times 1.32 =$

$15.79 \times .985 \times 1.75 =$

Estimate each quotient.

$19.9 \div 3.9 =$

$41.87 \div 5.7 =$

$99.71 \div 20.3 =$

$20.84 \div 2.69 =$

$79.55 \div 39.51 =$

$14.75 \div 2.9 =$

$80.99 \div 8.9 =$

$54.51 \div 10.87 =$

$25.4 \div 4.8 =$

$16.11 \div 3.75 =$

$34.78 \div 6.78 =$

$100.41 \div 24.77 =$

$249.7 \div 49.9 =$

$35.6 \div 6.2 =$

$27.113 \div 9.099 =$

$72.09 \div 8.11 =$

Find each product.

18.4 × 10 =

16.5 × .01 =

37.25 × 100 =

.003 × 100 =

46.57 × .1 =

Multiplying by powers of 10

3.56 × 100 = 356

84.2 × .1 = 8.42

3.156 × 1000 =	15.429 × .01 =
.0078 × 100 =	498.2 × .001 =
345.67 × 10 =	1846.5 × .0001 =
3.567 × 1000 =	18 × .01 =
17.672 × 10 =	37.456 × .1 =
567.112 × 100 =	8467.45 × .001 =
13.42 × 10 =	82.56 × .01 =
746.478 × 100 =	.034 × .01 =
2.498 × 10 =	4.56 × .1 =
.000085 × 1000 =	134.45 × .001 =
.0004 × 100 =	452.01 × .01 =
3.0501 × 10 =	2.56 × .1 =
17.468 × 1000 =	80.85 × .01 =
.008 × 100 =	24.968 × .001 =
.07 × 10,000 =	8.045 × .1 =

Write in scientific notation.

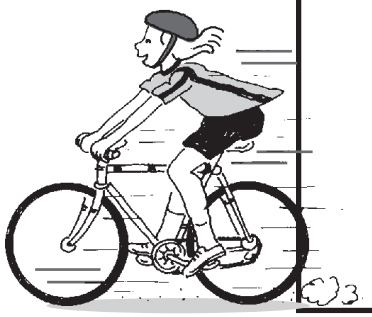
4800 =

520 =

32 =

65,000 =

5,000,000 =



Writing numerals in scientific notation

$37{,}000 = 3.7 \times 10^4$

Writing scientific notation as standard numerals

$4.25 \times 10^3 = 4250$

14,000 =	3720 =	140 =
853,000 =	240 =	6536 =
8405 =	135 =	16,000 =
24 =	2560 =	8,000,000 =
13,200 =	125 =	160,000 =

Write the standard numeral.

$6 \times 10^3 =$	$5.2 \times 10^1 =$	$1.7 \times 10^2 =$
$9 \times 10^6 =$	$8 \times 10^4 =$	$3.5 \times 10^3 =$
$4.21 \times 10^2 =$	$13.6 \times 10^1 =$	$5.243 \times 10^4 =$
$8.04 \times 10^3 =$	$3.2 \times 10^5 =$	$2.9 \times 10^6 =$
$3.2 \times 10^1 =$	$4.9801 \times 10^2 =$	$8.4 \times 10^4 =$

Find the team bowling average.

Name	Individual Average	Average
Jane	120	)
Rene	106	
Julie	85	
Tamika	142	
Rachel	137	
TOTAL:		

Finding the average of a group of numbers

$$\begin{array}{r} 88 \\ 97 \\ 72 \\ 95 \\ +\ 84 \\ \hline 436 \end{array} \qquad 87.2 \approx 87$$

$$5\overline{)436.0}$$

$$\begin{array}{r} 40 \\ \hline 36 \\ 35 \\ \hline 10 \\ 10 \\ \hline 0 \end{array}$$

Find the average test score.

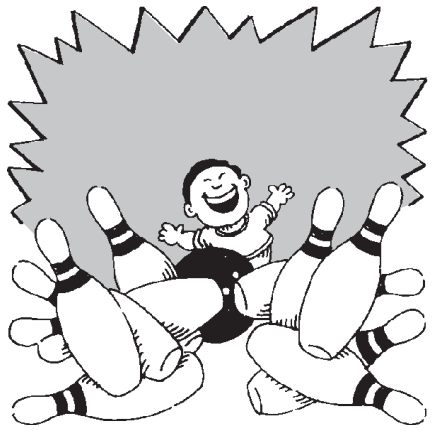
Name Scores	Test	Average
Michael	88	)
Shawna	76	
Emilio	94	
Laura	86	
Debra	90	
TOTAL:		

Find the average winter rainfall.

Month	Amount	Average
November	4.0"	)
December	5.5"	
January	6.2"	
February	3.3"	
March	4.6"	
TOTAL:		

Find the average allowance.

Name	Amount	Average
Joe	$15.00	)
Tom	$20.00	
Carl	$17.50	
Torrie	$18.50	
TOTAL:		



Find the average weekly distance.

Day	Amount	Average
Sunday	50 miles	)
Monday	250	
Tuesday	575	
Wednesday	600	
Thursday	425	
Friday	330	
Saturday	157	
TOTAL:		

Find each quotient.

246.3 ÷ 10 =

84.2 ÷ 100 =

17.456 ÷ .1 =

48.72 ÷ 10 =

136.82 ÷ .01 =

Dividing by powers of 10

3.56 ÷ 100 = .0356

84.2 ÷ .1 = 842

142.3 ÷ 100 =

45.67 ÷ .1 =

.256 ÷ 10 =

246.53 ÷ 1000 =

27.469 ÷ .01 =

.003 ÷ 10 =

.0305 ÷ 100 =

.045 ÷ .001 =

2.46 ÷ .1 =

37.46 ÷ 100 =

32.84 ÷ 100 =

15.678 ÷ .001 =

2.056 ÷ .1 =

.0034 ÷ .10 =

34.56 ÷ 100 =

8467.1 ÷ 1000 =

81.81 ÷ 10 =

81.81 ÷ 100 =

81.81 ÷ 1000 =

.456 ÷ .001 =

.2406 ÷ .0001 =

2.592 ÷ 10 =

174.1 ÷ 100 =

13.4 ÷ .01 =

82.93 ÷ 10 =

.456 ÷ .01 =

.456 ÷ .1 =

37.25 ÷ 10 =

84.579 ÷ .1 =

27.09 ÷ 100 =

Find the missing factor.

$4 \times \_\_\_\_ = 32$

$7 \times \_\_\_\_ = 49$

$9 \times \_\_\_\_ = 63$

$5 \times \_\_\_\_ = 15$

$2 \times \_\_\_\_ = 16$

Factor pairs of 24

$1 \times 24 = 24$
$2 \times 12 = 24$
$3 \times 8 = 24$
$4 \times 6 = 24$

therefore,
(1, 24), (2, 12), (3, 8), (4, 6)

Find all the factor pairs of each number.

12	32	42	51	70
(,) (,) (,)	(,) (,) (,)	(,) (,) (,) (,)	(,) (,)	(,) (,) (,) (,)
85	**21**	**40**	**60**	**17**
(,) (,)	(,) (,)	(,) (,) (,) (,)	(,) (,) (,) (,) (,) (,)	(,)
15	**28**	**33**	**56**	**63**
(,) (,)	(,) (,) (,)	(,) (,)	(,) (,) (,) (,)	(,) (,) (,)
100	**225**	**121**	**201**	**150**
(,) (,) (,) (,) (,)	(,) (,) (,) (,) (,)	(,) (,)	(,) (,)	(,) (,) (,) (,) (,) (,)

Circle all numbers divisible by 2.

31	46	85	77
24	18	17	29
30	53	98	72
65	8	107	252

Using divisibility rules, check whether 2, 3, 5, 9, and 10 are factors of 234.

234 ends in 4, therefore 2 is a factor.

2 + 3 + 4 = 9 which is divisible by 3 and 9, therefore 3 and 9 are factors.

234 does not end with a 5 or 0, therefore it is not divisible by 5 or 10.

Circle all numbers divisible by 3.

17	144	20	622	87	75	31	402	509	94
19	801	35	111	82	91	12	133	961	67

Circle all numbers divisible by 9.

207	502	604	711	828	35	1440	752	423	2345
721	889	333	669	225	89	3691	927	64	531

Circle all numbers divisible by 5.

30	42	65	73	104	86	142	15	59	107
291	306	495	850	721	62	78	340	200	81

Circle all numbers divisible by 10.

15	102	30	500	62	75	86	99	400	82
104	800	99	37	146	871	870	56	73	1000

Circle all numbers divisible by 2, 3, and 5.

30	75	90	42	85	99	36	84	80	300
24	65	50	35	60	57	315	360	49	105

Prime factorization

120

2 60

2 30

2 15

3 5

$120 = 2 \times 2 \times 2 \times 3 \times 5$

Draw a factor tree and write the prime factorization for each number.

44 44 =	81 81 =	135 135 =
150 150 =	157 157 =	185 185 =
200 200 =	210 210 =	255 255 =
302 302 =	624 624 =	4671 4671 =

Circle only the prime numbers.

11	14	21	29
33	37	40	45
51	59	62	68
77	79	81	87
89	91	94	97

Prime numbers have exactly 2 factors.

Composite numbers have more than 2 factors.

Find the factors of 39, and state whether it is prime or composite.

1, 3, 13, 39: composite

Complete the chart.

NUMBER	FACTORS	PRIME OR COMPOSITE
35		
42		
47		
57		
61		
66		
71		
74		
85		
93		
102		
115		
117		
121		
137		
157		
110		
338		
445		

Find the GCF of each set of numbers.

GCF (21, 28)

GCF (16, 24)

GCF (35, 40)

GCF (27, 54)

GCF (31, 62)

Finding the GCF and LCM of numbers

GCF: The **greatest common factor** is the greatest number that is a factor of two or more numbers.

LCM: The **lowest common multiple** is the least non-zero number that is a multiple of two or more numbers.

$12 = 2 \times 2 \times 3$
$20 = 2 \times 2 \times 5$
$GCF = 2 \times 2 = 4$
$LCM = 2 \times 2 \times 3 \times 5 = 60$

Find the GCF of each set of numbers.

GCF (9, 12, 15)	GCF (12, 18, 20)	GCF (20, 35, 40)

Find the LCM of each set of numbers.

LCM (24, 30)	LCM (18, 27)	LCM (12, 15)
LCM (9, 36)	LCM (32, 15)	LCM (28, 35)
LCM (8, 12, 15)	LCM (6, 9, 12)	LCM (10, 15, 20)

Evaluate each expression.

Given $a = 2,\ b = 3,\ c = 5$

$3a =$

$a + c =$

$a - 1 =$

$2a - b =$

$6 \div b =$

Given $a = 2,\ b = 3$

Evaluate: $6a + 7b$

$6(2) + 7(3)$

$12 + 21$

33

Complete each table.

x	$x + 3$	$5x$	$x - 2$
2			
3			
4			
5			
6			

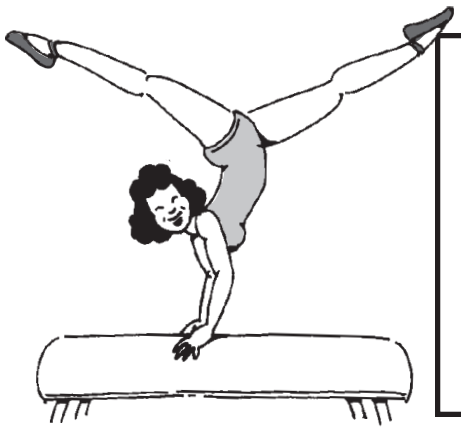
x	$2x - 4$	$3x + 2$	$x \div 2$
4			
6			
8			
12			
20			

r	s	$r + s$	$2rs$
1	2		
3	4		
5	6		
7	8		
9	10		

m	n	$2m + n$	$m - 2n$
7	1		
10	5		
12	3		
8	2		
10	4		

a	b	$\frac{a}{b} - 1$	$ab + 1$
16	8		
21	3		
2	1		
9	3		
35	5		

d	t	$5d - 2t$	$4d + 3t$
1	2		
2	1		
3	0		
4	3		
3	4		

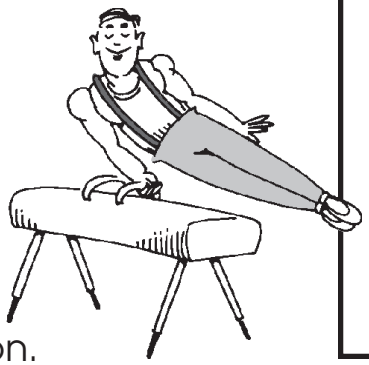


Solve the equations for x.

$$\begin{array}{r} x + 5 = 12 \\ -5 \quad -5 \\ \hline x = 7 \end{array} \qquad \begin{array}{r} x - 9 = 4 \\ +9 \quad +9 \\ \hline x = 13 \end{array}$$

Solve each equation.

$x + 1 = 3$	$x + 7 = 12$	$x + 3 = 15$	$x + 8 = 20$
$x + 5 = 13$	$x + 4 = 10$	$x + 17 = 25$	$x + 26 = 40$
$x - 1 = 3$	$x - 8 = 14$	$x - 4 = 17$	$x - 7 = 8$
$x - 3 = 1$	$x - 5 = 4$	$x - 26 = 12$	$x - 16 = 40$



Solve the equations for x.

$7x = 21$

$\frac{7x}{7} = \frac{21}{7}$

$x = 3$

$\frac{x}{4} = 2$

$4\left(\frac{x}{4}\right) = 4\ (2)$

$x = 8$

Solve each equation.

$2x = 8$	$3x = 21$	$9x = 18$	$7x = 28$
$5x = 65$	$4x = 32$	$8x = 72$	$6x = 42$
$\frac{x}{7} = 5$	$\frac{x}{2} = 6$	$\frac{x}{5} = 10$	$\frac{x}{9} = 6$
$\frac{x}{4} = 7$	$\frac{x}{3} = 8$	$\frac{x}{6} = 9$	$\frac{x}{10} = 7$

Reduce to simplest form.

$\frac{4}{6} =$ $\frac{6}{10} =$

$\frac{18}{24} =$ $\frac{21}{24} =$

$\frac{32}{40} =$ $\frac{85}{100} =$

$\frac{4}{14} =$ $\frac{25}{35} =$ $\frac{81}{90} =$ $\frac{64}{80} =$

$\frac{36}{48} =$ $\frac{18}{54} =$ $\frac{44}{55} =$ $\frac{46}{92} =$

Reducing fractions to simplest form

$$\frac{12}{18} = \frac{12 \div 6}{18 \div 6} = \frac{2}{3}$$

Reducing fractions to whole or mixed numbers

$$\frac{21}{4} = 5\frac{1}{4}$$

Write each fraction as a whole number.

$\frac{8}{4} =$ $\frac{16}{8} =$ $\frac{24}{12} =$ $\frac{36}{3} =$

$\frac{80}{20} =$ $\frac{75}{15} =$ $\frac{126}{21} =$ $\frac{98}{14} =$

$\frac{72}{18} =$ $\frac{95}{19} =$ $\frac{150}{25} =$ $\frac{231}{11} =$

Write each fraction as a mixed number in simplest form.

$\frac{24}{13} =$ $\frac{13}{6} =$ $\frac{15}{4} =$ $\frac{17}{3} =$

$\frac{36}{14} =$ $\frac{28}{16} =$ $\frac{24}{10} =$ $\frac{32}{12} =$

$\frac{62}{5} =$ $\frac{54}{8} =$ $\frac{48}{18} =$ $\frac{75}{20} =$

Write >, <, or = in each ◯.

$\frac{3}{4}$ ◯ $\frac{2}{3}$

$\frac{5}{9}$ ◯ $\frac{6}{11}$

$\frac{7}{8}$ ◯ $\frac{8}{9}$

$\frac{1}{2}$ ◯ $\frac{6}{12}$

$\frac{17}{30}$ ◯ $\frac{15}{20}$

$\frac{6}{13}$ ◯ $\frac{7}{15}$

Comparing fractions

$\frac{8}{12}$ and $\frac{15}{20}$

$\frac{40}{60} < \frac{45}{60}$; 60 = LCM

$\frac{8}{12} < \frac{15}{20}$

Ordering from least to greatest

$1\frac{3}{8} < 1\frac{5}{6} < 1\frac{9}{10} < 2\frac{1}{5}$

$\frac{4}{9}$ ◯ $\frac{2}{3}$

$\frac{18}{24}$ ◯ $\frac{3}{4}$

$\frac{18}{20}$ ◯ $\frac{8}{10}$

$\frac{75}{100}$ ◯ $\frac{3}{4}$

$\frac{16}{20}$ ◯ $\frac{5}{6}$

$\frac{1}{3}$ ◯ $\frac{30}{100}$

$\frac{1}{4}$ ◯ $\frac{5}{20}$

$\frac{6}{9}$ ◯ $\frac{8}{12}$

$1\frac{7}{8}$ ◯ $1\frac{7}{9}$

$2\frac{20}{50}$ ◯ $2\frac{4}{10}$

$2\frac{17}{20}$ ◯ $1\frac{18}{21}$

$1\frac{80}{100}$ ◯ $2\frac{4}{5}$

$1\frac{24}{30}$ ◯ $1\frac{12}{16}$

$2\frac{15}{25}$ ◯ $3\frac{28}{30}$

$1\frac{12}{18}$ ◯ $1\frac{3}{4}$

$3\frac{10}{12}$ ◯ $3\frac{14}{16}$

Write in order from least to greatest.

$\frac{3}{4}, \frac{5}{6}, \frac{2}{3}, \frac{1}{2}$

$2\frac{3}{4}, 2\frac{8}{9}, 2\frac{3}{5}, 2\frac{1}{6}$

$\frac{15}{20}, \frac{8}{12}, \frac{2}{5}, \frac{9}{10}$

$\frac{24}{12}, \frac{30}{20}, \frac{9}{3}, \frac{5}{4}$

$1\frac{1}{2}, 1\frac{3}{5}, \frac{7}{8}, 1$

$\frac{3}{5}, \frac{4}{9}, \frac{8}{11}, \frac{2}{3}$

$\frac{24}{24}, \frac{25}{20}, \frac{15}{20}, \frac{16}{12}$

$\frac{9}{10}, 2\frac{5}{8}, 1\frac{7}{9}, 2$

Write each sum in simplest form.

$\frac{2}{11} + \frac{5}{11} + \frac{1}{11} =$

$\frac{7}{20} + \frac{10}{20} + \frac{2}{20} =$

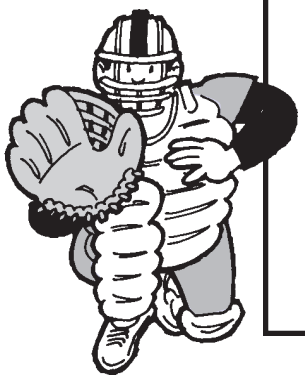
$\frac{8}{15} + \frac{6}{15} + \frac{2}{15} =$

$\frac{3}{4} + \frac{1}{4} + \frac{2}{4} =$

$\frac{7}{10} + \frac{1}{10} + \frac{2}{10} =$

$\frac{8}{21} + \frac{5}{21} + \frac{1}{21} =$

$\frac{11}{12} + \frac{7}{12} + \frac{5}{12} =$



Addition of fractional and mixed numbers with like denominators

$\frac{3}{14} + \frac{4}{14} + \frac{5}{14} = \frac{12}{14} = \frac{6}{7}$

$$\begin{array}{r} 7\frac{5}{8} \\ +\ 2\frac{1}{8} \\ \hline 9\frac{6}{8} = 9\frac{3}{4} \end{array}$$

$\frac{3}{9} + \frac{7}{9} + \frac{2}{9} =$

$\frac{2}{6} + \frac{3}{6} + \frac{5}{6} =$

$\frac{17}{32} + \frac{15}{32} + \frac{4}{32} =$

$$\begin{array}{r} 2\frac{1}{2} \\ +\ 3\frac{1}{2} \\ \hline \end{array}$$

$$\begin{array}{r} 4\frac{5}{8} \\ +\ 7\frac{1}{8} \\ \hline \end{array}$$

$$\begin{array}{r} 17\frac{3}{4} \\ +\ 12\frac{1}{4} \\ \hline \end{array}$$

$$\begin{array}{r} 32\frac{7}{11} \\ +\ 18\frac{5}{11} \\ \hline \end{array}$$

$$\begin{array}{r} 65\frac{3}{5} \\ +\ 18\frac{4}{5} \\ \hline \end{array}$$

$$\begin{array}{r} 12\frac{9}{10} \\ +\ 17\frac{3}{10} \\ \hline \end{array}$$

$$\begin{array}{r} 18\frac{4}{15} \\ +\ 7\frac{8}{15} \\ \hline \end{array}$$

$$\begin{array}{r} 19\frac{3}{20} \\ +\ 63\frac{19}{20} \\ \hline \end{array}$$

$$\begin{array}{r} 2\frac{3}{5} \\ 1\frac{1}{5} \\ +\ 5\frac{2}{5} \\ \hline \end{array}$$

$$\begin{array}{r} 8\frac{2}{9} \\ 17\frac{4}{9} \\ +\ 6\frac{3}{9} \\ \hline \end{array}$$

$$\begin{array}{r} 18\frac{5}{12} \\ 24\frac{7}{12} \\ +\ 16\frac{5}{12} \\ \hline \end{array}$$

$$\begin{array}{r} 27\frac{8}{21} \\ 62\frac{7}{21} \\ +\ 11\frac{10}{21} \\ \hline \end{array}$$

Write each sum in simplest form.

$$\begin{array}{r} \frac{2}{5} \\ +\ \frac{7}{15} \\ \hline \end{array} \qquad \begin{array}{r} \frac{5}{6} \\ +\ \frac{1}{8} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{2}{3} \\ +\ \frac{1}{4} \\ \hline \end{array} \qquad \begin{array}{r} \frac{3}{7} \\ +\ \frac{1}{4} \\ \hline \end{array}$$

Addition of fractional and mixed numbers with unlike denominators

$$\begin{array}{r} \frac{3}{4} = \frac{9}{12} \\ +\ \frac{2}{3} = \frac{8}{12} \\ \hline \frac{17}{12} = 1\frac{5}{12} \end{array} \qquad \begin{array}{r} 2\frac{5}{6} = 2\frac{20}{24} \\ +\ 7\frac{3}{8} = 7\frac{9}{24} \\ \hline 9\frac{29}{24} = 10\frac{5}{24} \end{array}$$

$$\begin{array}{r} \frac{2}{9} \\ +\ \frac{2}{3} \\ \hline \end{array} \qquad \begin{array}{r} \frac{5}{12} \\ +\ \frac{6}{9} \\ \hline \end{array} \qquad \begin{array}{r} \frac{18}{25} \\ +\ \frac{7}{20} \\ \hline \end{array} \qquad \begin{array}{r} \frac{7}{15} \\ +\ \frac{3}{10} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{3}{5} \\ \frac{1}{2} \\ +\ \frac{7}{10} \\ \hline \end{array} \qquad \begin{array}{r} \frac{1}{7} \\ \frac{3}{8} \\ +\ \frac{3}{4} \\ \hline \end{array} \qquad \begin{array}{r} \frac{2}{3} \\ \frac{3}{4} \\ +\ \frac{1}{2} \\ \hline \end{array} \qquad \begin{array}{r} \frac{3}{5} \\ \frac{5}{6} \\ +\ \frac{1}{2} \\ \hline \end{array}$$

$$\begin{array}{r} 2\frac{1}{2} \\ +\ 3\frac{1}{3} \\ \hline \end{array} \qquad \begin{array}{r} 5\frac{1}{4} \\ +\ 6\frac{2}{7} \\ \hline \end{array} \qquad \begin{array}{r} 8\frac{5}{6} \\ +\ 9\frac{1}{2} \\ \hline \end{array} \qquad \begin{array}{r} 10\frac{3}{5} \\ +\ 4\frac{2}{7} \\ \hline \end{array}$$

$$\begin{array}{r} 3\frac{1}{2} \\ 4\frac{1}{3} \\ +\ 5\frac{1}{6} \\ \hline \end{array} \qquad \begin{array}{r} 15\frac{7}{15} \\ 20\frac{9}{20} \\ +\ 5\frac{4}{5} \\ \hline \end{array} \qquad \begin{array}{r} 2\frac{3}{7} \\ 5\frac{1}{6} \\ +\ 1\frac{1}{2} \\ \hline \end{array} \qquad \begin{array}{r} 18\frac{3}{4} \\ 15\frac{5}{8} \\ +\ 3\frac{1}{3} \\ \hline \end{array}$$

Write each difference in simplest form.

$\frac{11}{12} - \frac{5}{12} =$ $\frac{7}{9} - \frac{4}{9} =$

$\frac{5}{3} - \frac{2}{3} =$ $\frac{11}{15} - \frac{5}{15} =$

$\frac{7}{8} - \frac{5}{8} =$ $\frac{9}{10} - \frac{4}{10} =$

$\frac{11}{16} - \frac{8}{16} =$ $\frac{16}{21} - \frac{7}{21} =$ $\frac{27}{28} - \frac{4}{28} =$ $\frac{29}{45} - \frac{9}{45} =$

$\frac{19}{20} - \frac{7}{20} =$ $\frac{19}{30} - \frac{11}{30} =$ $\frac{48}{50} - \frac{29}{50} =$ $\frac{46}{60} - \frac{16}{60} =$

Subtraction of fractional and mixed numbers with like denominators.

$$\begin{array}{r} \frac{5}{6} \\ -\frac{2}{6} \\ \hline \frac{3}{6} \end{array} = \frac{1}{2} \qquad \begin{array}{r} 5\frac{7}{9} \\ -2\frac{1}{9} \\ \hline 3\frac{6}{9} \end{array} = 3\frac{2}{3}$$

$$\begin{array}{r} \frac{5}{6} \\ -\frac{2}{6} \\ \hline \end{array} \qquad \begin{array}{r} \frac{7}{8} \\ -\frac{5}{8} \\ \hline \end{array} \qquad \begin{array}{r} \frac{24}{25} \\ -\frac{18}{25} \\ \hline \end{array} \qquad \begin{array}{r} \frac{17}{20} \\ -\frac{3}{20} \\ \hline \end{array}$$

$$\begin{array}{r} 5\frac{2}{3} \\ -4\frac{2}{3} \\ \hline \end{array} \qquad \begin{array}{r} 6\frac{9}{10} \\ -3\frac{4}{10} \\ \hline \end{array} \qquad \begin{array}{r} 18\frac{7}{9} \\ -11\frac{4}{9} \\ \hline \end{array} \qquad \begin{array}{r} 12\frac{13}{15} \\ -8\frac{8}{15} \\ \hline \end{array}$$

$$\begin{array}{r} 27\frac{13}{28} \\ -15\frac{7}{28} \\ \hline \end{array} \qquad \begin{array}{r} 32\frac{16}{18} \\ -14\frac{14}{18} \\ \hline \end{array} \qquad \begin{array}{r} 38\frac{25}{30} \\ -29\frac{20}{30} \\ \hline \end{array} \qquad \begin{array}{r} 46\frac{19}{40} \\ -13\frac{11}{40} \\ \hline \end{array}$$

$$\begin{array}{r} 112\frac{50}{65} \\ -87\frac{17}{65} \\ \hline \end{array} \qquad \begin{array}{r} 104\frac{36}{52} \\ -96\frac{10}{52} \\ \hline \end{array} \qquad \begin{array}{r} 157\frac{37}{75} \\ -109\frac{12}{75} \\ \hline \end{array} \qquad \begin{array}{r} 205\frac{37}{50} \\ -146\frac{17}{50} \\ \hline \end{array}$$

Write each difference in simplest form.

$\begin{array}{r} \frac{3}{4} \\ -\ \frac{1}{2} \\ \hline \end{array}$

$\begin{array}{r} \frac{5}{6} \\ -\ \frac{1}{8} \\ \hline \end{array}$

$\begin{array}{r} \frac{9}{10} \\ -\ \frac{3}{5} \\ \hline \end{array}$

$\begin{array}{r} \frac{4}{5} \\ -\ \frac{3}{8} \\ \hline \end{array}$

Subtraction of fractional and mixed numbers with unlike denominators

$\begin{array}{r} \frac{8}{9} = \frac{8}{9} \\ -\ \frac{2}{3} = \frac{6}{9} \\ \hline \frac{2}{9} \end{array}$

$\begin{array}{r} 3\frac{1}{3} = 3\frac{2}{6} = 2\frac{8}{6} \\ -\ 1\frac{1}{2} = 1\frac{3}{6} = 1\frac{3}{6} \\ \hline 1\frac{5}{6} \end{array}$

$\begin{array}{r} \frac{7}{11} \\ -\ \frac{1}{2} \\ \hline \end{array}$

$\begin{array}{r} \frac{9}{14} \\ -\ \frac{3}{7} \\ \hline \end{array}$

$\begin{array}{r} \frac{19}{20} \\ -\ \frac{14}{15} \\ \hline \end{array}$

$\begin{array}{r} \frac{17}{21} \\ -\ \frac{5}{7} \\ \hline \end{array}$

$\begin{array}{r} 3\frac{4}{5} \\ -\ 2\frac{1}{6} \\ \hline \end{array}$

$\begin{array}{r} 1\frac{7}{8} \\ -\ \frac{5}{6} \\ \hline \end{array}$

$\begin{array}{r} 5\frac{3}{4} \\ -\ 2\frac{2}{7} \\ \hline \end{array}$

$\begin{array}{r} 3\frac{17}{18} \\ -\ 1\frac{2}{5} \\ \hline \end{array}$

$\begin{array}{r} 2\frac{1}{4} \\ -\ 1\frac{1}{2} \\ \hline \end{array}$

$\begin{array}{r} 3\frac{1}{4} \\ -\ 1\frac{5}{6} \\ \hline \end{array}$

$\begin{array}{r} 7\frac{3}{8} \\ -\ 3\frac{9}{10} \\ \hline \end{array}$

$\begin{array}{r} 10\frac{1}{3} \\ -\ 6\frac{5}{8} \\ \hline \end{array}$

$\begin{array}{r} 6 \\ -\ 2\frac{4}{5} \\ \hline \end{array}$

$\begin{array}{r} 7\frac{3}{7} \\ -\ 5 \\ \hline \end{array}$

$\begin{array}{r} 8\frac{1}{2} \\ -\ 6\frac{3}{4} \\ \hline \end{array}$

$\begin{array}{r} 17\frac{3}{10} \\ -\ 12\frac{4}{5} \\ \hline \end{array}$

Write each product in simplest form.

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

$\frac{5}{6} \times 10 =$

$\frac{7}{8} \times 16 =$

Multiplication of fractions

$\frac{3}{4} \times 12 = \frac{3}{\cancel{4}_1} \times \frac{\cancel{12}^3}{1} = 9$

$\frac{2}{3} \times \frac{5}{7} = \frac{10}{21}$

$1\frac{1}{2} \times 2\frac{1}{3} = \frac{3}{2} \times \frac{7}{3} = \frac{21}{6} = \frac{7}{2} = 3\frac{1}{2}$

$\frac{9}{10} \times 24 =$

$\frac{5}{6} \times 7 =$

$\frac{2}{5} \times \frac{3}{4} =$

$\frac{3}{7} \times \frac{14}{15} =$

$\frac{8}{9} \times \frac{1}{4} =$

$\frac{2}{3} \times \frac{3}{6} =$

$\frac{8}{9} \times \frac{21}{24} =$

$\frac{5}{8} \times \frac{2}{15} =$

$2\frac{1}{2} \times \frac{4}{5} =$

$\frac{5}{7} \times 5\frac{1}{4} =$

$\frac{3}{8} \times 3\frac{1}{5} =$

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

$3\frac{3}{4} \times 2\frac{2}{5} =$

$1\frac{1}{4} \times 2\frac{3}{10} =$

$1\frac{1}{2} \times 2\frac{1}{3} =$

$\frac{2}{3} \times \frac{6}{7} \times \frac{1}{4} =$

$\frac{3}{4} \times \frac{1}{2} \times \frac{8}{9} =$

$\frac{7}{10} \times \frac{5}{6} \times \frac{3}{14} =$

$\frac{5}{8} \times \frac{3}{10} \times \frac{4}{9} =$

Write each quotient in simplest form.

Division of fractions

$$\frac{3}{4} \div \frac{1}{2} = \frac{3}{4} \times \frac{2}{1} = \frac{6}{4} = 1\frac{1}{2}$$

$$2\frac{1}{4} \div 3 = \frac{9}{4} \times \frac{1}{3} = \frac{9}{12} = \frac{3}{4}$$

$\frac{5}{6} \div 10 =$

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

$3 \div \frac{3}{5} =$

$\frac{2}{3} \div \frac{4}{9} =$

$\frac{3}{4} \div \frac{9}{10} =$

$6 \div 2\frac{2}{3} =$

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

$\frac{3}{7} \div \frac{6}{7} =$

$2\frac{3}{4} \div 2\frac{3}{4} =$

$6\frac{4}{5} \div 2 =$

$\frac{15}{22} \div \frac{3}{11} =$

$9 \div 3\frac{1}{3} =$

$\frac{6}{7} \div \frac{1}{2} =$

$\frac{2}{3} \div 4 =$

$\frac{5}{6} \div \frac{2}{3} =$

$\frac{1}{2} \div \frac{1}{3} =$

$3\frac{1}{5} \div \frac{1}{10} =$

$4\frac{1}{3} \div 2 =$

$\frac{5}{9} \div \frac{5}{3} =$

$8\frac{1}{2} \div 4\frac{1}{4} =$

$1\frac{1}{5} \div 2\frac{1}{10} =$

$\frac{17}{24} \div \frac{1}{8} =$

$21 \div \frac{3}{4} =$

$\frac{8}{9} \div \frac{2}{3} =$

Determine probability for one die.

P (6) =

P (1) =

P (even number) =

P (odd number) =

P (prime number) =

$$\text{Probability} = \frac{\#\text{ desired outcomes}}{\#\text{ possible outcomes}}$$

Coin toss: $P(\text{head}) = \frac{1}{2}$

Die roll: $P(3) = \frac{1}{6}$

Card draw: $P(\text{King}) = \frac{4}{52}$

Determine probability for one deck of cards.

P (Jack) =

P (heart) =

P (spade) =

P (face card) =

P (red card) =

P (ace) =

P (even-numbered) =

P (seven) =

P (black card) =

Determine probability for spinner shown.

P (3) =

P (prime number) =

P (odd number) =

P (multiple of two) =

P (multiple of five) =

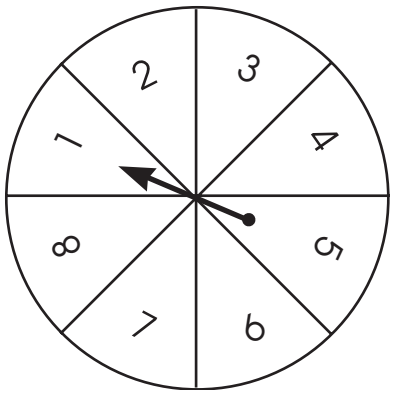
P (number > 9) =

P (number ≥ 7) =

P (number < 5) =

P (0) =

P (8) =



Write each decimal as a fraction in lowest terms.

.7 =

.4 =

.12 =

.25 =

.42 =

Writing decimals as fractions

$.2 = \frac{2}{10} = \frac{1}{5}$ $\quad 3.25 = 3\frac{1}{4}$

Writing fractions as decimals

$2\frac{3}{4} = \frac{11}{4} \Rightarrow 4\overline{)11.00}$

2.75

$-\ 8$

30

$-\ 28$

20

$-\ 20$

0

2.5 = $\quad$ 3.48 = $\quad$ 5.45 =

6.15 = $\quad$ 8.72 = $\quad$ 18.9 =

7.125 = $\quad$ 11.75 = $\quad$ 13.375 =

5.28 = $\quad$ 2.001 = $\quad$ 5.002 =

17.80 = $\quad$ 26.3 = $\quad$ 24.33 =

Write each fraction or mixed number as a decimal.

$\frac{3}{4} =$ $\quad \frac{4}{5} =$ $\quad \frac{7}{8} =$ $\quad \frac{9}{10} =$

$\frac{5}{16} =$ $\quad \frac{17}{20} =$ $\quad \frac{14}{25} =$ $\quad \frac{87}{100} =$

$1\frac{1}{2} =$ $\quad 2\frac{1}{4} =$ $\quad 3\frac{2}{5} =$ $\quad 7\frac{1}{8} =$

$6\frac{7}{20} =$ $\quad 8\frac{7}{10} =$ $\quad 14\frac{11}{25} =$ $\quad 2\frac{9}{100} =$

$13\frac{197}{1000} =$ $\quad 2\frac{11}{50} =$ $\quad 9\frac{13}{1000} =$ $\quad 7\frac{23}{100} =$

Write as a terminating decimal.

$\frac{1}{2} =$ $\frac{1}{8} =$

$\frac{1}{5} =$ $\frac{3}{16} =$

$\frac{1}{4} =$ $\frac{3}{8} =$ $\frac{1}{16} =$ $\frac{13}{20} =$

$\frac{19}{25} =$ $\frac{3}{5} =$ $\frac{5}{25} =$ $\frac{7}{16} =$

Write $\frac{5}{8}$ as a terminating decimal.

$\frac{5}{8} = .625$

Write $\frac{2}{3}$ as a repeating decimal.

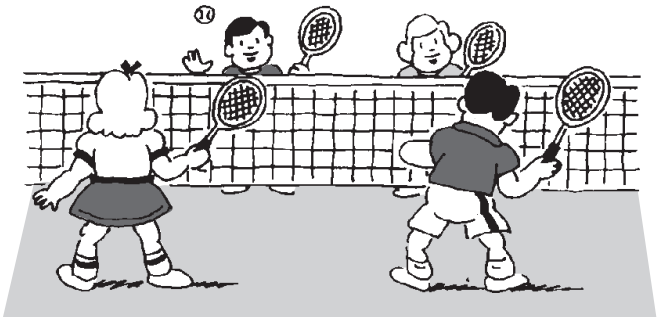
$\frac{2}{3} = .666... = .\overline{6}$

Write as a repeating decimal.

$\frac{5}{6} =$ $\frac{7}{9} =$ $\frac{2}{15} =$ $\frac{11}{12} =$

$\frac{1}{3} =$ $\frac{1}{6} =$ $\frac{2}{9} =$ $\frac{7}{11} =$

$\frac{5}{12} =$ $\frac{1}{18} =$ $\frac{5}{9} =$ $\frac{5}{11} =$



Solve each proportion for x.

Solve the proportion.

$\frac{x}{18} = \frac{1}{3} \Rightarrow 3x = 18$

$\frac{3x}{3} = \frac{18}{3}$

$x = 6$

$\frac{6}{18} = \frac{1}{3}$

$\frac{x}{24} = \frac{1}{4}$

$\frac{x}{12} = \frac{3}{4}$ $\quad$ $\frac{x}{9} = \frac{2}{3}$ $\quad$ $\frac{x}{4} = \frac{1}{2}$

$\frac{12}{x} = \frac{4}{5}$ $\quad$ $\frac{21}{x} = \frac{7}{8}$ $\quad$ $\frac{20}{x} = \frac{5}{9}$

$\frac{6}{8} = \frac{x}{4}$ $\quad$ $\frac{50}{75} = \frac{x}{3}$ $\quad$ $\frac{48}{100} = \frac{x}{25}$

$\frac{20}{50} = \frac{2}{x}$ $\quad$ $\frac{36}{40} = \frac{9}{x}$ $\quad$ $\frac{10}{32} = \frac{5}{x}$

$\frac{x}{28} = \frac{4}{7}$ $\quad$ $\frac{13}{x} = \frac{39}{15}$ $\quad$ $\frac{81}{102} = \frac{27}{x}$

Convert each percent to a fraction in lowest terms.

6% =

1% =

3% =

2% =

4% =

5% =

12% =

15% =

100% =

150% =

25% =

36% =

48% =

27% =

85% =

64% =

72% =

115% =

Convert 16% to a fraction in lowest terms.

$$16\% = \frac{16}{100} = \frac{4}{25}$$

Convert $\frac{44}{80}$ to a percent.

$$\frac{44}{80} = \frac{11}{20} = \frac{55}{100} = 55\%$$

Write each fraction as a percent.

$\frac{3}{4} =$ $\frac{1}{2} =$ $\frac{36}{40} =$ $\frac{1}{4} =$

$\frac{9}{12} =$ $\frac{17}{20} =$ $\frac{19}{25} =$ $\frac{13}{100} =$

$\frac{9}{10} =$ $\frac{33}{60} =$ $\frac{81}{100} =$ $\frac{4}{5} =$

$\frac{6}{24} =$ $\frac{28}{35} =$ $\frac{7}{10} =$ $\frac{60}{75} =$

$\frac{6}{12} =$ $\frac{19}{50} =$ $\frac{95}{125} =$ $\frac{21}{300} =$

Write each decimal as a percent.

.06 = .10 =

.03 = .15 =

.85 = .01 =

.17 = .77 = .80 = .44 =

.11 = 1.2 = 3.5 = 2.25 =

.50 = .75 = .30 = 1.1 =

Write .27 as a percent.

$.27 = \frac{27}{100} = 27\%$

Write 12% as a decimal.

$12\% = \frac{12}{100} = .12$

Write each percent as a decimal.

7% = 5% = 2% = 9% =

10% = 92% = 1.5% = 3.25% =

100% = 150% = 8.3% = 19% =

45% = 23% = 2.3% = .23% =

72% = .6% = 8% = 1.2% =

Using Proportion in Percent Word Problems

What percent of 125 is 50?

$$\frac{x}{100} = \frac{50}{125}$$

$$125x = 5000$$

$$x = 40$$

What is 35% of 80?

$$\frac{x}{80} = \frac{35}{100}$$

$$100x = 2800$$

$$x = 28$$

What % of 80 is 32?

What is 35% of 500?

60 is 25% of what?

What % of 48 is 12?

What is 75% of 200?

45 is 60% of what?

What % of 75 is 60?

What is 62% of 350?

18 is 36% of what?

What % of 150 is 90?

What is 92% of 200?

82 is 40% of what?

Percent Word Problems

1. Jamie got 19 out of 20 problems right on his math test. What percent did he get right?

2. Tara spent 40% of her allowance of $30 on food. How much did she spend on food?

3. Kerry spent $60 on compact disks. This was 30% of her total budget. How much was her budget?

4. Peter needed an 85% on his next test to retain his B average. How many problems did he need to get right if there were 40 problems on the test?

5. Larry won a $500 gift certificate from the local department store. He decided to use 25% of it on a new jacket. How much was the jacket?

6. Rachel put $375 of her $1875 paycheck into savings. What percent of her money went into savings?

7. The teacher designed a test that was 30% multiple choice questions. If there were 60 questions on the test, how many questions were multiple choice?

8. Lakesha spent six hours per day studying. What percent of her day did she spend studying?

9. The library had 900 books in its children's section. This was 45% of its total collection. How many books did the library have all together?

10. Jennifer earned $18,000 last year. She spent 21% of her salary on college tuition. How much did the tuition cost?

Interest = Principal x Rate x Time

Find Interest (I).

P = $800; R = 6%; T = 3 years
I = P x R x T
I = ___ x ___ x ___
I =

P = $400; R = 8%; T = 2 years

I = P x R x T

I = $400 x .08 x 2

I = 64

P = $500; R = 7%; T = 1 year
I = P x R x T
I = ___ x ___ x ___
I =

P = $200; R = 3%; T = 2 years
I = P x R x T
I = ___ x ___ x ___
I =

P = $800; R = 4%; T = 2 years
I = P x R x T
I = ___ x ___ x ___
I =

P = $300; R = 8%; T = 3 years
I = P x R x T
I = ___ x ___ x ___
I =

P = $1200; R = 9%; T = 5 years
I = P x R x T
I = ___ x ___ x ___
I =

P = $850; R = 5%; T = 4 years
I = P x R x T
I = ___ x ___ x ___
I =

P = $2000; R = 6.5%; T = 3 years
I = P x R x T
I = ___ x ___ x ___
I =

P = $750; R = 10.5%; T = 1 year
I = P x R x T
I = ___ x ___ x ___
I =

P = $690; R = 12.5%; T = 2 years
I = P x R x T
I = ___ x ___ x ___
I =

P = $4000; R = 22%; T = 5 years
I = P x R x T
I = ___ x ___ x ___
I =

P = $2500; R = 14.5%; T = 10 years
I = P x R x T
I = ___ x ___ x ___
I =

P = $6000; R = 18.5%; T = 7 years
I = P x R x T
I = ___ x ___ x ___
I =

Interest Word Problems

1. Latrece kept $550 in her savings account for 3 years, earning an interest rate of 6%. How much interest did her account earn?

2. Torrie bought a stereo. He borrowed $700 at a rate of 12% for 1 year. How much interest did he pay?

3. Terecita put $2500 in her savings account. The bank paid an interest rate of 8.5%. How much interest had the account earned at the end of 4 years?

4. Douglas borrowed $1800 to go on a ski trip. He had to pay an interest rate of 9% for 2 years. How much interest did he pay?

5. Carl bought a certificate of deposit valued at $1000 at an interest rate of 7.5% for 2 years. How much money will the certificate earn?

6. Sandra invested $5200 at a rate of 12% for 3 years. How much interest did she earn?

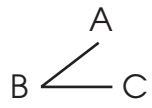
7. How much interest will Renee have to pay on a 5 year loan of $675 at a rate of 10%?

8. Rhajon put $650 in his savings account, earning 5.5% interest. What is the total amount of money he will have in the account at the end of 1 year?

9. Lindsey borrowed $700 at an interest rate of 22%. What is the total amount of money she will have to pay at the end of 3 years?

10. Sue put $10,000 into a savings account for college. The interest rate on the account is 9.5%. What is the total amount of money in the account after 4 years?

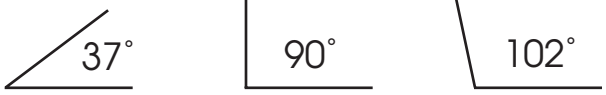
List the measures of the acute angles and of the obtuse angles.

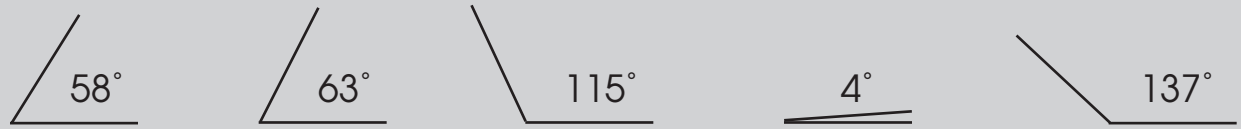


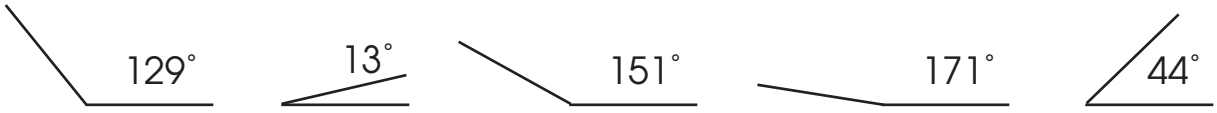
m ∠ ABC < 90°
∠ ABC is an acute angle.

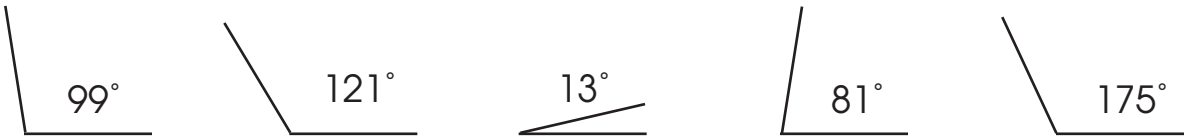
m ∠ DEF = 90°
∠ DEF is a right angle.

m ∠ GHI > 90°
∠ GHI is an obtuse angle.









Acute:

Obtuse:

Find the measure of the complement to each angle.

36°	48°
2°	56°
13°	61°

$32° + 58° = 90°$

32° is the complement of 58°.

$127° + 53° = 180°$

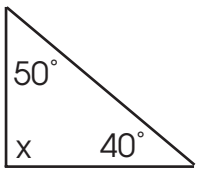
127° is the supplement of 53°.

29°	87°	76°	1°
15°	35°	47°	52°
39°	82°	40°	71°

Find the measure of the supplement to each angle.

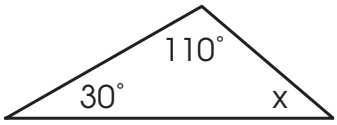
13°	85°	101°	93°
117°	90°	179°	3°
136°	27°	162°	54°
9°	150°	107°	161°
149°	11°	142°	25°

Find the missing degree measure.

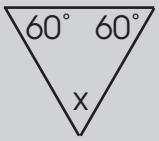


x =

The sum of the measure of the angles of any triangle is 180°. Find the missing degree measure.



180° = 30° + 110° + x ∴ x = 40°



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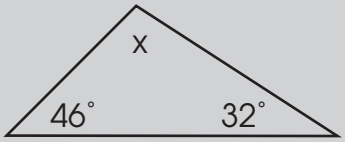

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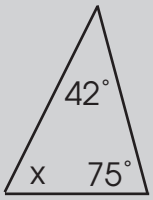

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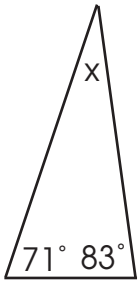

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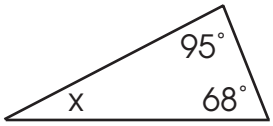

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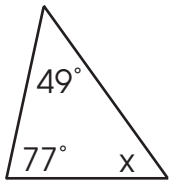

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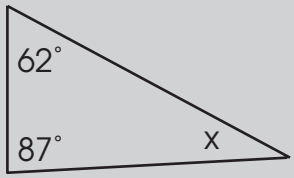

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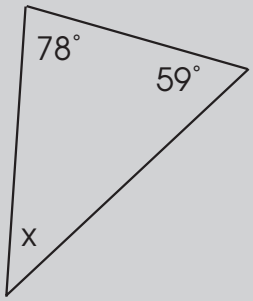

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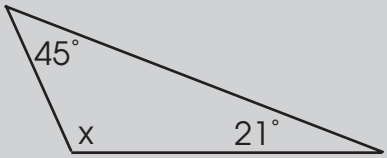
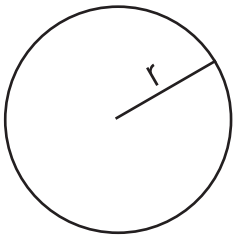


x =

Circle Formulas



$C = 2\pi r$

$A = \pi r^2$

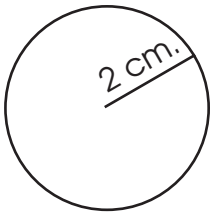
Find the circumference and area of a circle with radius 3″ and $\pi = \frac{22}{7}$.

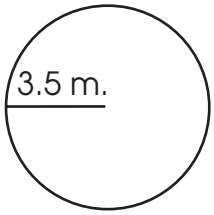
$C = 2\pi r$ $\qquad$ $A = \pi r^2$

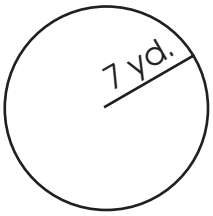
$C = 2\left(\frac{22}{7}\right)(3)$ $\qquad$ $A = \frac{22}{7}(9)$ sq. in.

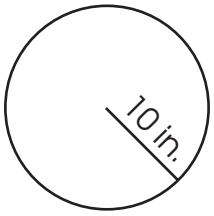
$C = \frac{132}{7} = 18\frac{6}{7}$ in. $\qquad$ $A = \frac{198}{7} = 28\frac{2}{7}$ sq. in.

Find the circumference of each circle.

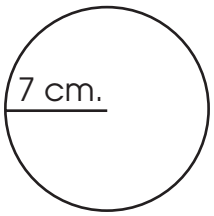


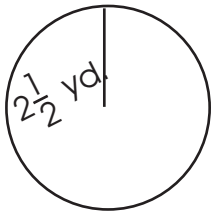


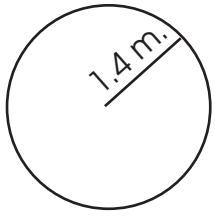




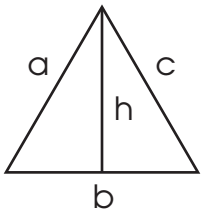
Find the area of each circle.





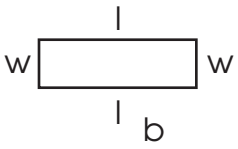


Polygon Formulas



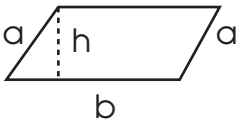
$P = a + b + c$

$A = \frac{1}{2}bh$



$P = 2l + 2w$

$A = lw$



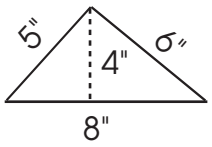
$P = 2a + 2b$

$A = hb$

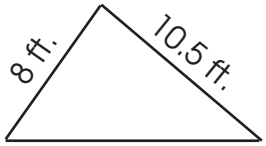
Find the perimeter and area of the triangle.

$P = 5'' + 6'' + 8'' = 19''$

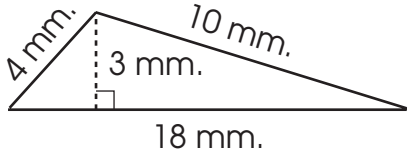
$A = \frac{1}{2}(8'')(4'') =$



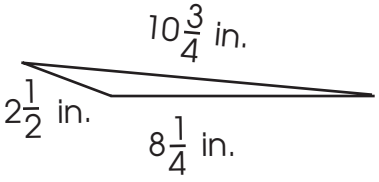
Find the perimeter.



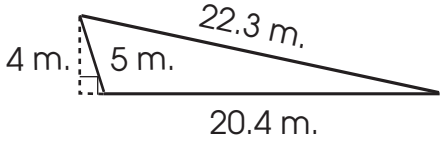
Find the area.



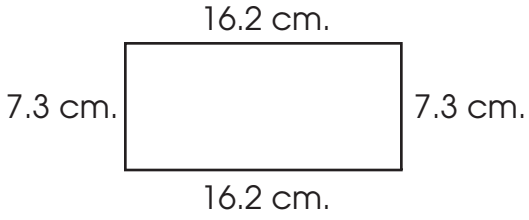
Find the perimeter.



Find the area.

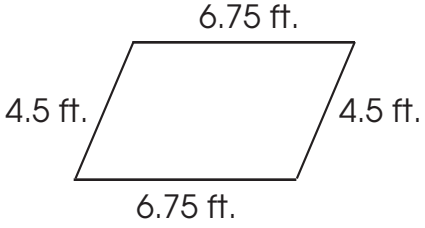


Find the perimeter.

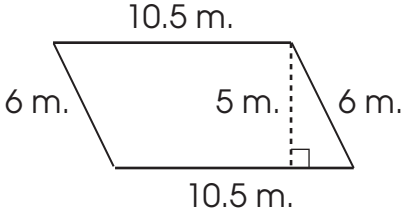


Find the area.

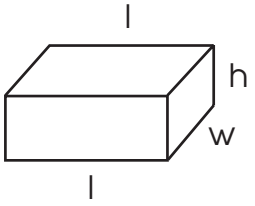
Find the perimeter.



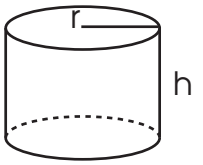
Find the area.



Volume Formulas

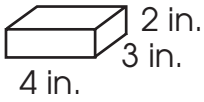


$V = lwh$



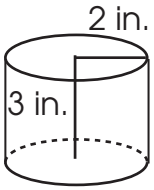
$V = \pi r^2 h$

Find the volume of each solid.



$V = lwh$

$V = 4\text{in.} \times 3\text{in.} \times 2\text{in.} = 24\text{cu. in.}$

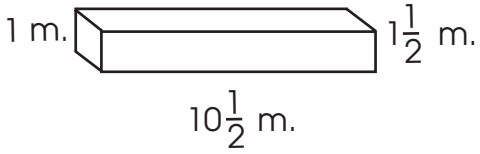


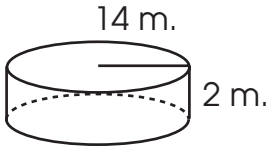
$V = \pi r^2 h \quad \pi = \frac{22}{7}$

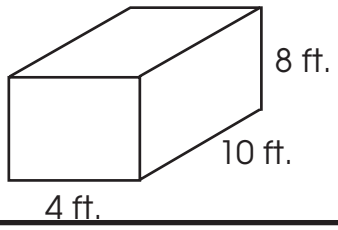
$V = \frac{22}{7}(4)(3) = \frac{264}{7}$

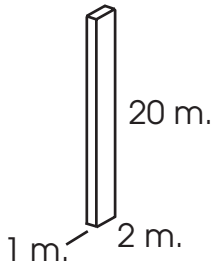
$V = 37\frac{5}{7}$ cu. in.

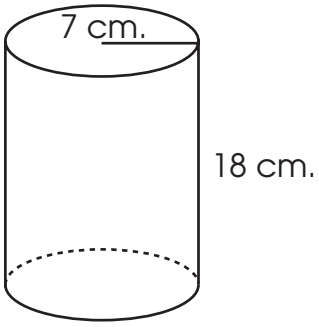
Find the volume of each solid.

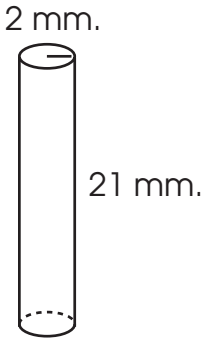


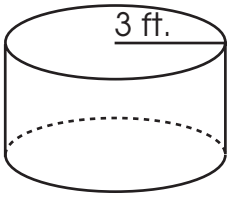


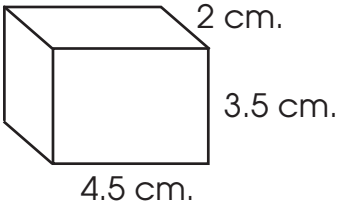












Find the sum.

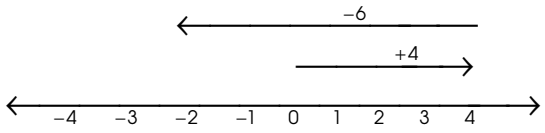
$6 + -4 =$

$-2 + 8 =$

$-3 + -5 =$

$-10 + 6 =$

Addition of integers



$4 + -6 = -2$

$6 + -3 =$	$-9 + -2 =$	$-1 + -1 =$
$-7 + 9 =$	$10 + -15 =$	$3 + -4 =$
$6 + -8 =$	$-3 + -11 =$	$14 + -2 =$
$-8 + 8 =$	$7 + 0 =$	$8 + 5 =$
$17 + -4 =$	$-15 + -10 =$	$-20 + 7 =$
$-5 + 4 =$	$-10 + 10 =$	$1 + -3 =$
$2 + -8 =$	$-6 + 11 =$	$15 + -7 =$
$-13 + 0 =$	$21 + -22 =$	$23 + -16 =$
$18 + -12 =$	$-6 + 19 =$	$-3 + -9 =$
$-32 + 19 =$	$-40 + 20 =$	$-50 + 50 =$
$42 + 8 =$	$-36 + 37 =$	$52 + -38 =$
$-57 + 39 =$	$-43 + -16 =$	$68 + -37 =$
$49 + -60 =$	$-26 + -5 =$	$-13 + 58 =$
$-93 + 47 =$	$-61 + -9 =$	$8 + 32 =$
$-58 + 58 =$	$37 + -43 =$	$75 + -25 =$
$99 + -29 =$	$-38 + 88 =$	$-61 + 19 =$

Find the difference.

$6 - 3 =$

$-7 - 1 =$

$5 - 4 =$

$4 - -5 =$

Subtraction of integers
(Add the opposite)

$6 - 2 = 6 + -2 = 4$
$6 - -2 = 6 + +2 = 8$
$-6 - 2 = -6 + -2 = -8$
$-6 - -2 = -6 + +2 = -4$

$-6 - -3 =$	$-4 - -2 =$	$7 - 1 =$
$-3 - -3 =$	$-4 - 5 =$	$-2 - 1 =$
$1 - 8 =$	$-2 - -9 =$	$-3 - 4 =$
$7 - -7 =$	$-5 - 3 =$	$-2 - 0 =$
$-5 - 10 =$	$2 - 8 =$	$6 - -7 =$
$-8 - -8 =$	$10 - 1 =$	$-4 - -1 =$
$-10 - -10 =$	$13 - 0 =$	$0 - -3 =$
$9 - -9 =$	$12 - 18 =$	$16 - -7 =$
$10 - 8 =$	$-12 - -9 =$	$-3 - -4 =$
$-5 - -6 =$	$23 - 14 =$	$-13 - 23 =$
$6 - -10 =$	$2 - 3 =$	$-5 - 7 =$
$13 - -5 =$	$17 - -7 =$	$-9 - 9 =$
$-11 - -11 =$	$4 - 0 =$	$-5 - 1 =$
$21 - 22 =$	$-23 - 24 =$	$-15 - -9 =$
$52 - -4 =$	$16 - -40 =$	$-50 - 50 =$
$98 - -3 =$	$-89 - -46 =$	$82 - 82 =$

Find the product.

Multiplication of integers

$2 \times 3 = 6$
$-2 \times -3 = 6$ } same signs

$2 \times -3 = -6$
$-2 \times 3 = -6$ } different signs

$1 \times -3 =$		
$2 \times -5 =$		
$5 \times -9 =$		
$9 \times -8 =$		
$7 \times -1 =$	$-7 \times 2 =$	$-1 \times -4 =$
$3 \times -5 =$	$4 \times 6 =$	$-5 \times -8 =$
$-9 \times -5 =$	$8 \times -3 =$	$-7 \times 5 =$
$2 \times -6 =$	$-4 \times 8 =$	$5 \times -10 =$
$9 \times -9 =$	$-8 \times -8 =$	$-7 \times -2 =$
$-1 \times -5 =$	$-2 \times 7 =$	$3 \times -6 =$
$-5 \times -9 =$	$-9 \times -6 =$	$8 \times -4 =$
$-1 \times 0 =$	$2 \times -10 =$	$-4 \times 9 =$
$-6 \times -4 =$	$-12 \times 2 =$	$-11 \times -3 =$
$14 \times -2 =$	$-13 \times -1 =$	$-2 \times -2 =$
$-3 \times 3 =$	$-16 \times -3 =$	$-20 \times 0 =$
$30 \times -1 =$	$5 \times -19 =$	$2 \times -32 =$
$-3 \times 17 =$	$-6 \times -60 =$	$-7 \times 100 =$
$-13 \times 13 =$	$-2 \times 41 =$	$-5 \times -25 =$
$21 \times -21 =$	$-10 \times -10 =$	$-1 \times 0 =$
$-91 \times 4 =$	$-22 \times -22 =$	$-15 \times 16 =$

Find the quotient.

$1 \div 1 =$

$-3 \div -3 =$

$5 \div -1 =$

$6 \div 2 =$

Division of integers

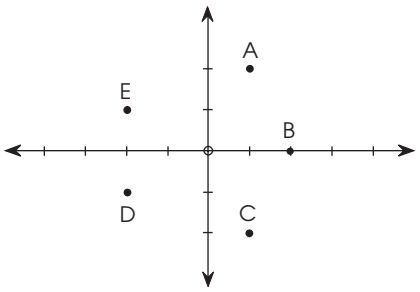
$12 \div 4 = 3$
$-12 \div -4 = 3$ } same signs

$12 \div -4 = -3$
$-12 \div 4 = -3$ } different signs

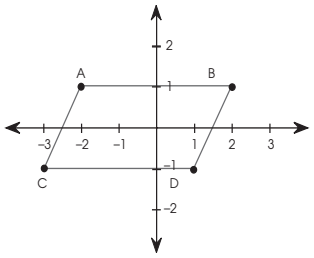
$-7 \div 7 =$	$6 \div -2 =$	$-4 \div 4 =$
$-4 \div -2 =$	$-6 \div -1 =$	$8 \div -2 =$
$-6 \div -2 =$	$-8 \div 2 =$	$9 \div -9 =$
$-8 \div -2 =$	$-10 \div 5 =$	$-11 \div 11 =$
$-9 \div 3 =$	$9 \div 1 =$	$-10 \div -5 =$
$14 \div -7 =$	$-20 \div -5 =$	$-15 \div 15 =$
$21 \div -21 =$	$-15 \div -5 =$	$22 \div -11 =$
$-24 \div -12 =$	$-20 \div 10 =$	$-15 \div 3 =$
$15 \div -1 =$	$24 \div 4 =$	$20 \div -5 =$
$24 \div -8 =$	$32 \div -16 =$	$-25 \div -5 =$
$-28 \div 7 =$	$21 \div 7 =$	$-32 \div 8 =$
$54 \div 9 =$	$-63 \div -9 =$	$-72 \div -8 =$
$0 \div -5 =$	$-90 \div 10 =$	$42 \div -7 =$
$-27 \div 3 =$	$-30 \div -10 =$	$52 \div -2 =$
$-85 \div 5 =$	$-75 \div -25 =$	$36 \div -12 =$
$-100 \div -20 =$	$-99 \div 11 =$	$-35 \div 7 =$

Name the coordinates of the points shown.

A (,)
B (,)
C (,)
D (,)
E (,)



Graph and connect the points in order:
A(-2, 1); B(2, 1); C(-3, -1); D(1, -1)



Graph and connect each set of points in order.

1) {(-9, 2), (-8, -2), (-7, 2)}

2) {(-4, 2), (-6, 2), (-6, -2), (-4, -2)}

3) {(-6, 0), (-5, 0)}

4) {(-3, -2), (-3, 2), (-1, 2), (-1, 0), (-2, 0), (-1, -2)}

5) {(0, 2), (2, 2)}

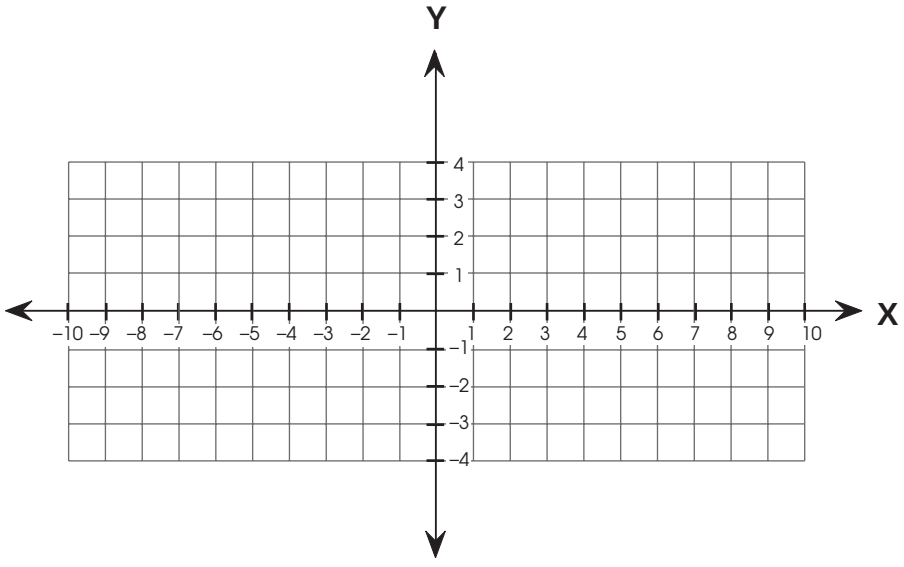
6) {(1, 2), (1, -2)}

7) {(5, 2), (3, 2), (3, -2), (5, -2)}

8) {(3, 0), (4, 0)}

9) {(6, 2), (8, -2)}

10) {(6, -2), (8, 2)}



ANSWER KEY

page 1

1300				
775				
950				
1875				
2000				
3300	5075			
10,400	8400			
2000	3050			
3850	9970			
12,200	2600			
1790	8146	17,057	1532	7168
15,930	5059	11,600	26,664	12,221
11,015	9090	15,605	8646	14,070

page 2

422				
441				
510				
230				
522				
5123	2332			
4444	2110			
2111	611			
1111	7138			
2008	1111			
3433	1784	945	72	1214
2164	1857	778	5805	2195
4642	1355	171	361	1691

page 3

1600				
3000				
56,000				
36,000				
120,000				
240,000	200,000			
300,000	90,000			
24,000	36,000			
30,000	280,000			
720,000	1,600,000			
610	1404	2905	4823	8028
14,000	4494	48,762	37,890	44,748
39,483	236,602	360,450	108,173	53,125

page 4

500			
60			
90			
40			
5			
70	90		
40	4		
60	90		
30	30		
180	70		
601 R3	743 R1	155 R5	
116 R5	151 R17	70 R8	
102 R7	76 R81	93 R14	

page 5

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243	462	502	512
108	111	118	121
721	859	865	1000
645	651	654	660
900	909	919	990
502	512	522	532
703	765	789	795
5136	5835	5842	
1004	1010	1100	
4586	4658	4856	

page 6

180				
860				
760				
460				
1450				
700	8000	7300	6200	1000
100	600	1500	10,000	4100
1000	6000	6000	1000	6000
8000	3000	3000	6000	4000
40,000	30,000	20,000		
70,00	10,000	30,000		
30,000	80,000			
1,000,000	4,000,000	5,000,000		
2,000,000	246,000,000			

page 7

70		
120		
90		
60		
130		
270	1500	
1600	700	
900	1600	
4000	7000	
8900	5000	
50	30	30
10	30	40
110	120	100
420	600	50
180		
570		

page 8

36,000	
14,000	
9000	
30,000	
9000	
24,000	8000
16,000	18,000
20,000	20,000
48,000	72,000
180,000	210,000
80	300
10	6
3	3
100	20
30	10
10	20
20	20

page 9

6^3				
7^4				
2^5				
3^3				
5^4				
7^5	9^4	3^6		
4^5	8^4	9^3		
81	27	16	32	1
1,000,000	17	100	900	0
512	1296	49	256	8
4000	600	170		
120,000	12	45		
100	700,000	36		
54	16	0		
100,000	40,000	54		

page 10

10		
13		
12		
19.1		
.703	18.81	3.129
40.87	25.83	13.363
24.3	31.35	24.241
25.3657	29.104	7.9372
3.3194	19.2745	41.0384
276.371	6.0161	30.189

page 11

6.1		
3.0		
2.0		
.25		
2.22	7.7	16.36
8.32	10.58	.744
61.895	1.34	37.52
20.56	5.94	10.55

page 12

1.0			
1.0			
1.0			
1.0			
3.0			
19.6	1.872	.0861	.0725
659.4	44.45	55.2	4586.4
.1035	.8415	.0056	.0375
10.3785	12.79491	23.7336	.072684

page 13

.7	4		
.6	.05		
4.7	412	24.3	320.4
.31	12	25	.07
4.5	640	9.3	2
2000	8.2	23.1	23.6

page 14

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2.05	2.15	2.51	
11.23	12:13	12.31	13:12
2.32	2.33	3.23	3.32
1.05	1.12	1.45	1.52
1.02	2.05	2.10	10.2
8.09	8.13	8.57	8.75
.172	1.72	17.02	17.72
2.08	2.5	2.58	2.85
11.33	11.43	13.44	14.13
1.007	1.7	1.707	1.71

page 16

$10			
$50			
$30			
$120			
$80			
20	105	53	80
11.6	76.5	70.1	6
5	9.40	220	5

page 18

184	
.165	
3725	
.3	
4.657	
3156	.15429
.78	.4982
3456.7	.18465
3567	.18
176.72	3.7456
56711.2	8.46745
134.2	.8256
74647.8	.00034
24.98	.456
.085	.13445
.04	4.5201
30.501	.256
17.468	.8085
.8	.024968
700	.8045

page 15

8.6		
16.2		
18.5		
7.4		
29.1		
17.46	18.41	19.12
24.00	84.99	17.00
121.52	11.08	8.45
6.457	19.205	38.422
145.111	8.051	18.000
8.455	62.001	9.172
4.1567	16.5233	80.8081
24.5679	.0322	1.0405

page 17

36	
28	
900	
80	
7	
30	84
88	48
45	40
18	18
400	32
5	5
7	4
5	5
2	5
5	6
9	3
5	9

page 19

4.8×10^3		
5.2×10^2		
3.2×10		
6.5×10^4		
5×10^6		
1.4×10^4	3.72×10^3	1.4×10^2
8.53×10^5	2.4×10^2	6.536×10^3
8.405×10^3	1.35×10^2	1.6×10^4
2.4×10	2.56×10^3	8×10^6
1.32×10^4	1.25×10^2	1.6×10^5
6000	52	170
9,000,000	80,000	3500
421	136	52,430
8040	320,000	2,900,000
32	498.01	84,000

page 20

118	
86.8	4.72
$17.75	341

page 21

24.63	
.842	
174.56	
4.872	
13,682	
1.423	.0003
456.7	.000305
.0256	45
.24653	24.6
2746.9	.3746
.3284	8.4671
15,678	8.181
20.56	.8181
.034	.08181
.3456	456
2406	45.6
.2592	4.56
1.741	3.725
1340	845.79
8.293	.2709

page 22

8
7
7
3
8

(1, 12)	(1,32)	(1,42)	(1,51)	(1,70)
(2,6)	(2,16)	(2,21)	(3,17)	(2,35)
(3,4)	(4,8)	(3,14)		(5,14)
		(6,7)		(7,10)
(1,85)	(1,21)	(1,40)	(1,60)	(1.17)
(5,17)	(3,7)	(2,20)	(2,30)	
		(4,10)	(3,20)	
		(5,8)	(4,15)	
			(5,12)	
			(6,10)	
(1,15)	(1,28)	(1,33)	(1,56)	(1,63)
(3.5)	(2.14)	(3,11)	(2,28)	(3,21)
	(4,7)		(4,14)	(7,9)
			(7,8)	
(1,100)	(1,225)	(1,121)	(1,201)	(1,150)
(2,50)	(3,75)	(11,11)	(3,67)	(2,75)
(4,25)	(5,45)			(3,50)
(5,20)	(9,25)			(5,30)
(10,10)	(15,15)			(6,25)
				(10,15)

page 23

46
24 18
30 98 72
8 252
144 87 75 402
801 111 12

207 711 828 1440 423
333 225 927 531

30 65 15
495 850 340 200

30 500 400
800 870 1000

30 90 300
60 360

page 24

44 = 2 x 2 x 11

```
44
^
2 22
  ^
  2 11
```

81 = 3 x 3 x 3 x 3

```
81
^
3 27
  ^
  3 9
    ^
    3 3
```

135 = 3 x 3 x 3 x 5

```
135
^
3 45
  ^
  3 15
    ^
    3 5
```

150 = 2 x 3 x 5 x 5

```
150
^
2 75
  ^
  3 25
    ^
    5 5
```

157 = 1 x 157

```
157
^
1 57
```

185 = 5 x 37

```
185
^
5 37
```

200 = 2 x 2 x 2 x 5 x 5

```
200
^
2 100
  ^
  2 50
    ^
    2 25
      ^
      5 5
```

210 = 2 x 3 x 5 x 7

```
210
^
2 105
  ^
  3 35
    ^
    7 5
```

255 = 3 x 5 x 17

```
255
^
3 85
  ^
  5 17
```

302 = 2 x 151

```
302
^
2 151
```

624 = 2 x 2 x 2 x 2 x 13

```
624
^
2 312
  ^
  2 156
    ^
    2 78
      ^
      2 39
        ^
        3 13
```

4671 = 3 x 3 x 3 x 173

```
4671
^
3 1557
  ^
  3 519
    ^
    3 173
```

page 25

11: 29: 37: 59
79: 89: 97

1, 35, 5, 7: comp.
1, 42, 3, 14, 6, 7: comp.
1, 47: prime
1, 57, 3, 19: comp.
1, 61: prime
1, 66, 2, 33, 3, 22, 6, 11: comp.
1, 71: prime
1, 74, 2, 37: comp.
1, 85, 5, 17: comp.
1, 93, 3, 31: comp.
1, 102, 2, 51, 3, 34, 6,17: comp.
1, 115, 5, 23: comp.
1, 117, 3, 39, 9, 13: comp.
1, 121, 11: comp.
1, 137: prime
1, 157: prime
1, 110, 2, 55, 5, 22, 10,11: comp.
1, 338, 2, 169, 13, 26: comp.
1, 445, 5, 89: comp.

page 26

7
8
5
27
31

3	2	5
120	54	60
36	480	140
120	36	60

page 27

6					
7					
1					
1					
2					
5	10	0	4	14	2
6	15	1	8	20	3
7	20	2	12	26	4
8	25	3	20	38	6
9	30	4	36	62	10
3	4		15	5	
7	24		25	0	
11	60		27	6	
15	112		18	4	
19	180		24	2	
1	129		1	10	
6	64		8	11	
1	3		15	12	
2	28		14	25	
6	176		7	24	

page 28

2	5	12	12
8	6	8	14
4	22	21	15
4	9	38	56

page 29

9	7	2	4
13	8	9	7
35	12	50	54
28	24	54	70

page 30

$\frac{2}{3}$	$\frac{3}{5}$		
$\frac{3}{4}$	$\frac{7}{8}$		
$\frac{4}{5}$	$\frac{17}{20}$		
$\frac{2}{7}$	$\frac{5}{7}$	$\frac{9}{10}$	$\frac{4}{5}$
$\frac{3}{4}$	$\frac{1}{3}$	$\frac{4}{5}$	$\frac{1}{2}$
2	2	2	12
4	5	6	7
4	5	6	21
$1\frac{11}{13}$	$2\frac{1}{6}$	$3\frac{3}{4}$	$5\frac{2}{3}$
$2\frac{4}{7}$	$1\frac{3}{4}$	$2\frac{2}{5}$	$2\frac{2}{3}$
$12\frac{2}{5}$	$6\frac{3}{4}$	$2\frac{2}{3}$	$3\frac{3}{4}$

page 31

>		>					
<		=					
<		<					
<		=		>		=	
<		>		=		=	
>		=		>		<	
>		<		<		<	
$\frac{1}{2}$,	$\frac{2}{3}$,	$\frac{3}{4}$,	$\frac{5}{6}$		$2\frac{1}{6}$,	$2\frac{3}{5}$,	$2\frac{3}{4}$, $2\frac{8}{9}$
$\frac{2}{5}$,	$\frac{8}{12}$,	$\frac{15}{20}$,	$\frac{9}{10}$		$\frac{5}{4}$,	$\frac{30}{20}$,	$\frac{24}{12}$, $\frac{9}{3}$
$\frac{7}{8}$,	1	$1\frac{1}{2}$,	$1\frac{3}{5}$		$\frac{4}{9}$,	$\frac{3}{5}$,	$\frac{2}{3}$, $\frac{8}{11}$
$\frac{15}{20}$,	$\frac{24}{24}$,	$\frac{25}{20}$,	$\frac{16}{1}$		$\frac{9}{10}$,	$1\frac{7}{9}$,	2 $2\frac{5}{8}$

page 32

$\frac{8}{11}$			
$\frac{19}{20}$			
$1\frac{1}{15}$			
$1\frac{1}{2}$			
1	$1\frac{1}{3}$		
$\frac{2}{3}$	$1\frac{2}{3}$		
$1\frac{11}{12}$	$1\frac{1}{8}$		
6	$11\frac{3}{4}$	30	$51\frac{1}{11}$
$84\frac{2}{5}$	$30\frac{1}{5}$	$25\frac{4}{5}$	$83\frac{1}{10}$
$9\frac{1}{5}$	32	$59\frac{5}{12}$	$101\frac{4}{21}$

page 33

$\frac{13}{15}$	$\frac{23}{24}$		
$\frac{11}{12}$	$\frac{19}{28}$		
$\frac{8}{9}$	$1\frac{1}{12}$	$1\frac{7}{100}$	$\frac{23}{30}$
$1\frac{4}{5}$	$1\frac{15}{56}$	$1\frac{11}{12}$	$1\frac{14}{15}$
$5\frac{5}{6}$	$11\frac{15}{28}$	$18\frac{1}{3}$	$14\frac{31}{35}$
13	$41\frac{43}{60}$	$9\frac{2}{21}$	$37\frac{17}{24}$

page 34

$\frac{1}{2}$	$\frac{1}{3}$			
1	$\frac{2}{5}$			
$\frac{1}{4}$	$\frac{1}{2}$			
$\frac{3}{16}$	$\frac{3}{7}$	$\frac{23}{28}$	$\frac{4}{9}$	
$\frac{3}{5}$	$\frac{4}{15}$	$\frac{19}{50}$	$\frac{1}{2}$	
$\frac{1}{2}$	$\frac{1}{4}$	$\frac{6}{25}$		
1	$3\frac{1}{2}$	$7\frac{1}{3}$	$4\frac{1}{3}$	
$12\frac{3}{4}$	$18\frac{1}{9}$	$9\frac{1}{6}$	$33\frac{1}{5}$	
$25\frac{33}{65}$	$8\frac{1}{2}$	$48\frac{1}{3}$	$59\frac{2}{5}$	

page 35

$\frac{1}{4}$	$\frac{17}{24}$		
$\frac{3}{10}$	$\frac{17}{40}$		
$\frac{3}{22}$	$\frac{3}{14}$	$\frac{1}{60}$	$\frac{2}{21}$
$1\frac{19}{30}$	$1\frac{1}{24}$	$3\frac{13}{28}$	$2\frac{49}{90}$
$\frac{3}{4}$	$1\frac{5}{12}$	$3\frac{19}{40}$	$3\frac{17}{24}$
$3\frac{1}{5}$	$2\frac{3}{7}$	$1\frac{3}{4}$	$4\frac{1}{2}$

page 36

6		
$8\frac{1}{3}$		
14		
$21\frac{3}{5}$	$5\frac{5}{6}$	$\frac{3}{10}$
$\frac{2}{5}$	$\frac{2}{9}$	$\frac{1}{3}$
$\frac{7}{9}$	$\frac{1}{12}$	2
$3\frac{3}{4}$	$1\frac{1}{5}$	10
9	$2\frac{7}{8}$	$3\frac{1}{2}$
$\frac{1}{7}$	$\frac{1}{3}$	
$\frac{1}{8}$	$\frac{1}{12}$	

page 37

$\frac{1}{12}$

$\frac{1}{8}$

5

$\frac{1}{6}$

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

$\frac{5}{6}$ $1\frac{1}{2}$

$2\frac{1}{4}$ 32

2 $2\frac{1}{6}$

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

1 2

$3\frac{2}{5}$ $\frac{4}{7}$

$2\frac{1}{2}$ $5\frac{2}{3}$

$2\frac{7}{10}$ 28

$1\frac{5}{7}$ $1\frac{1}{3}$

page 38

$\frac{1}{6}$

$\frac{1}{6}$

$\frac{1}{2}$

$\frac{1}{2}$

$\frac{2}{3}$

$\frac{1}{13}$ $\frac{1}{4}$ $\frac{1}{4}$

$\frac{3}{13}$ $\frac{1}{2}$ $\frac{1}{13}$

$\frac{5}{13}$ $\frac{1}{13}$ $\frac{1}{2}$

$\frac{1}{8}$ $\frac{5}{8}$

$\frac{1}{2}$ $\frac{1}{2}$

$\frac{1}{8}$ 0

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

0 $\frac{1}{8}$

page 39

$\frac{7}{10}$

$\frac{2}{5}$

$\frac{3}{25}$

$\frac{1}{4}$

$\frac{21}{50}$

$2\frac{1}{2}$ $3\frac{12}{25}$ $5\frac{9}{20}$

$6\frac{3}{20}$ $8\frac{18}{25}$ $18\frac{9}{10}$

$7\frac{1}{8}$ $11\frac{3}{4}$ $13\frac{3}{8}$

$5\frac{7}{25}$ $2\frac{1}{1000}$ $5\frac{1}{500}$

$17\frac{4}{5}$ $26\frac{3}{10}$ $24\frac{33}{100}$

.75	.8	.875	.9
.3125	.85	.56	.87
1.5	2.25	3.4	7.125
6.35	8.7	14.44	2.09
13.197	2.22	9.013	7.23

page 40

.5	.125		
.2	.1875		
.25	.375	.0625	.65
.76	.6	.2	.4375
.83	.7	.13	.916
.3	.16	.2	.63
.416	.05	.5	.45

page 41

6			
9	6	2	
15	24	36	
3	2	12	
5	10	16	
16	5	34	

page 42

$\frac{3}{50}$	$\frac{1}{100}$			
$\frac{3}{100}$	$\frac{1}{50}$			
$\frac{1}{25}$	$\frac{1}{20}$			
$\frac{3}{25}$	$\frac{3}{20}$	1	$1\frac{1}{2}$	
$\frac{1}{4}$	$\frac{9}{25}$	$\frac{12}{25}$	$\frac{27}{100}$	
$\frac{17}{20}$	$\frac{16}{25}$	$\frac{18}{25}$	$1\frac{3}{20}$	
75%	50%	90%	25%	
75%	85%	76%	13%	
90%	55%	81%	80%	
25%	80%	70%	80%	
50%	38%	76%	7%	

page 43

6%	10%		
3%	15%		
85%	1%		
17%	77%	80%	44%
11.1%	120%	350%	225.1%
50%	75%	30%	110%
.07	.05	.02	.09
.1	.92	.015	.0325
1	1.5	.083	.19
.45	.23	.023	.0023
.72	.006	.08	.012

page 44

40%	175	240
25%	150	75
80%	217	50
60%	184	205

page 45

95%
$12
$200
34
$125
20%
18
25%
2000
$3780

page 46

$144	
$35	$12
$64	$72
$540	$170
$390	$78.75
$172.50	$4400
$3625	$7770

page 47

$ 99
$84
$850
$324
$150
$1872
$337.50
$35.75
$462
$3800

page 48

37°	102°
58°	115°
63°	137°
4°	129°
13°	151°
44°	171°
77°	143°
17°	165°
29°	99°
13°	121°
81°	175°

page 49

54°	42°		
88°	34°		
77°	29°		
61°	3°	14°	89°
75°	55°	43°	38°
51°	8°	50°	19°
167°	95°	79°	87°
63°	90°	1°	177°
44°	153°	18°	126°
171°	30°	73°	19°
31°	169°	38°	155°

page 50

90°		
60°	102°	63°
26°	17°	54°
31°	43°	114°

page 51

$12\frac{4}{7}$ cm.	22 m.
44 yds.	$62\frac{6}{7}$ in.
$50\frac{2}{7}$ in.	154 cm.
$19\frac{4.5}{7}$ yds.	$6\frac{1.12}{7}$ m.

page 52

31 ft.	27sq.mm
$21\frac{1}{2}$ in.	51 sq. in.
47 cm.	21.25 m^2
22.5 ft.	52.5 m^2

page 53

$15\frac{3}{4}$ cu.m.	1232 m.
320 cu. ft.	40 $m.^3$
2772 cu. cm.	264 $m.^3$
297 cu. ft.	31.50 cu. m.

page 54

2		
6		
–8		
–4		
3	–11	–2
2	–5	–1
–2	–14	12
0	7	13
13	–25	13
–1	0	–2
–6	5	8
–13	–1	7
6	13	–12
–13	–20	0
50	1	14
–18	–59	31
–11	–31	45
–46	70	40
0	–6	50
70	50	–42

page 55

3		
–8		
1		
9		
–3	–2	6
0	–9	–3
–7	7	–7
14	–8	–2
–15	–6	13
0	9	–3
0	13	3
18	–6	23
2	–3	1
1	9	–36
16	–1	–12
18	24	–18
0	4	–6
–1	–47	–6
56	56	–100
101	–43	0

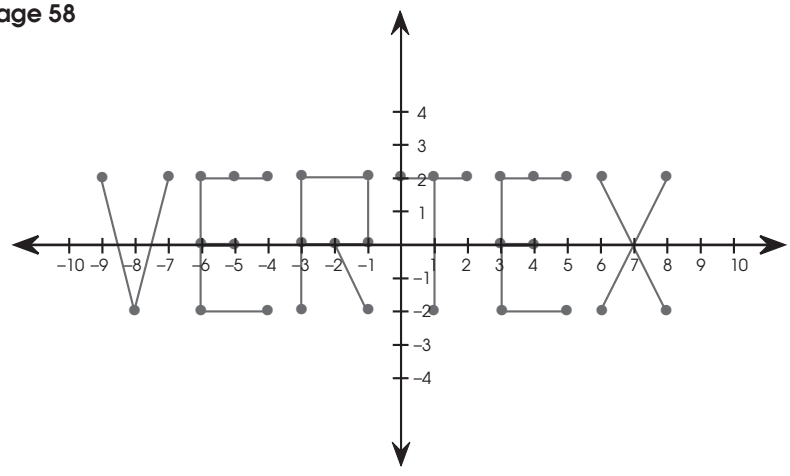
page 56

–3		
–10		
–45		
–72		
–7	–14	4
–15	24	40
45	–24	–35
–12	–32	–50
–81	64	14
5	–14	–18
45	54	–32
0	–20	–36
24	–24	330
–28	13	4
–9	48	0
–30	–95	–64
–51	360	–700
–169	–82	125
–441	100	0
–364	484	–240

page 57

1		
1		
–5		
3		
–1	–3	–1
2	6	–4
3	–4	–1
4	–2	–1
–3	9	2
–2	4	–1
–1	3	–2
2	–2	–5
–15	6	–4
–3	–2	5
–4	3	–4
6	7	9
0	–9	–6
–9	3	–26
–17	3	–3
5	–9	–5

page 58



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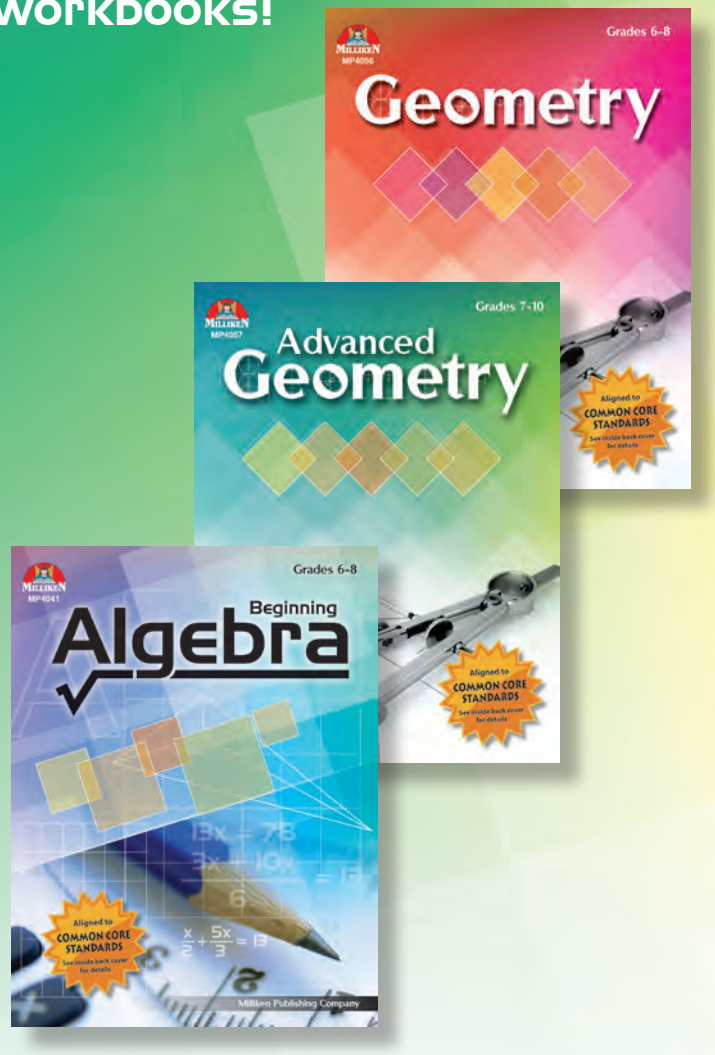

Milliken Publishing Company
a Lorenz company
P.O. Box 802
Dayton, OH 45401-0802
www.LorenzEducationalPress.com

ISBN 978-1-4291-1032-7