

Home Study Packet *for* ***Math 87***

by
Stephen Hake and John Saxon

Test Forms

CONTENTS

Facts Practice

Tests

Math 87: An Incremental Development

Test Forms

Copyright © 1991 by Stephen Hake and John Saxon

All rights reserved.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher.

Printed in the United States of America.

ISBN: 1-56577-074-9

Fifth printing: February 1996

Reaching us via the Internet

WWW: <http://www.saxonpub.com>

E-mail: helpdesk@saxonpub.com

Saxon Publishers, Inc.
1320 W. Lindsey
Norman, Oklahoma 73069

Math 87

Facts Practice

Instructions

Begin each day's session with a facts practice and limit the testing time to five minutes or less. The rule of thumb for timing a facts practice test is one minute for every 20 questions. For example, five minutes for a 100-question facts practice is a good beginning. Mental processes become fully automated after breaking this five-minute barrier. A student's performance on the facts practice also becomes markedly better after breaking this barrier. Two to three days after a student breaks the five-minute mark, the speed is often down to four minutes. The time element is very important.

The facts practice test forms may be copied as many times as necessary to complete the course for an individual student, or answers may be written on onionskin placed over the page. Begin by saying, "Ready, set, go," and time the student carefully. At the beginning of the course, quickly go over the answers. Later, it is not necessary to go over the questions daily. Initially, the challenge is to generate the proper response to the question. With practice, the challenge is no longer to get the right answer but rather to complete the task as quickly as possible. The student is racing to beat his/her previous records. The student should be asked to record his/her time at the top of the page.

[illegible]

Test C—100 Multiplication Facts

Name _____ Time _____

[illegible]

$\begin{array}{r} 5 \\ \times 6 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ \times 9 \\ \hline \end{array}$
$\begin{array}{r} 9 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ \times 6 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ \times 7 \\ \hline \end{array}$
$\begin{array}{r} 3 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ \times 9 \\ \hline \end{array}$
$\begin{array}{r} 6 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ \times 6 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ \times 3 \\ \hline \end{array}$
$\begin{array}{r} 4 \\ \times 6 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ \times 6 \\ \hline \end{array}$
$\begin{array}{r} 2 \\ \times 6 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ \times 6 \\ \hline \end{array}$
$\begin{array}{r} 5 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ \times 6 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ \times 7 \\ \hline \end{array}$
$\begin{array}{r} 3 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ \times 9 \\ \hline \end{array}$

$7 \overline{)21}$	$2 \overline{)10}$	$6 \overline{)42}$	$1 \overline{)3}$	$4 \overline{)24}$	$3 \overline{)6}$	$9 \overline{)54}$	$6 \overline{)18}$	$4 \overline{)0}$	$5 \overline{)30}$
$4 \overline{)32}$	$8 \overline{)56}$	$1 \overline{)0}$	$6 \overline{)12}$	$3 \overline{)18}$	$9 \overline{)72}$	$5 \overline{)15}$	$2 \overline{)8}$	$7 \overline{)42}$	$6 \overline{)36}$
$6 \overline{)0}$	$5 \overline{)10}$	$9 \overline{)9}$	$2 \overline{)6}$	$7 \overline{)63}$	$4 \overline{)16}$	$8 \overline{)48}$	$1 \overline{)2}$	$5 \overline{)35}$	$3 \overline{)21}$
$2 \overline{)18}$	$6 \overline{)6}$	$3 \overline{)15}$	$8 \overline{)40}$	$2 \overline{)0}$	$5 \overline{)20}$	$9 \overline{)27}$	$1 \overline{)8}$	$4 \overline{)4}$	$7 \overline{)35}$
$4 \overline{)20}$	$9 \overline{)63}$	$1 \overline{)4}$	$7 \overline{)14}$	$3 \overline{)3}$	$8 \overline{)24}$	$5 \overline{)0}$	$6 \overline{)24}$	$8 \overline{)8}$	$2 \overline{)16}$
$5 \overline{)5}$	$8 \overline{)64}$	$3 \overline{)0}$	$4 \overline{)28}$	$7 \overline{)49}$	$2 \overline{)4}$	$9 \overline{)81}$	$3 \overline{)12}$	$6 \overline{)30}$	$1 \overline{)5}$
$8 \overline{)32}$	$1 \overline{)1}$	$9 \overline{)36}$	$3 \overline{)27}$	$2 \overline{)14}$	$5 \overline{)25}$	$6 \overline{)48}$	$8 \overline{)0}$	$7 \overline{)28}$	$4 \overline{)36}$
$2 \overline{)12}$	$5 \overline{)45}$	$1 \overline{)7}$	$4 \overline{)8}$	$7 \overline{)0}$	$8 \overline{)16}$	$3 \overline{)24}$	$9 \overline{)45}$	$1 \overline{)9}$	$6 \overline{)54}$
$7 \overline{)56}$	$9 \overline{)0}$	$8 \overline{)72}$	$2 \overline{)2}$	$5 \overline{)40}$	$3 \overline{)9}$	$9 \overline{)18}$	$1 \overline{)6}$	$4 \overline{)12}$	$7 \overline{)7}$

$\frac{12}{5} =$	$\frac{7}{2} =$	$\frac{20}{3} =$	$\frac{5}{2} = 2$	$\frac{24}{12} =$
$\frac{10}{2} =$	$\frac{25}{6} =$	$\frac{5}{4} =$	$\frac{21}{8} = 2$	$\frac{6}{3} =$
$\frac{10}{5} =$	$\frac{21}{10} =$	$\frac{12}{12} =$	$\frac{15}{3} =$	$\frac{10}{3} =$
$\frac{16}{16} =$	$\frac{5}{3} =$	$\frac{27}{10} =$	$\frac{3}{2} =$	$\frac{11}{8} =$
$\frac{36}{12} =$	$\frac{11}{10} =$	$\frac{21}{16} =$	$\frac{4}{4} =$	$\frac{25}{9} =$
$\frac{11}{6} =$	$\frac{8}{8} =$	$\frac{20}{9} =$	$\frac{15}{2} =$	$\frac{4}{3} =$
$\frac{25}{8} =$	$\frac{15}{4} =$	$\frac{2}{2} =$	$\frac{25}{12} =$	$\frac{32}{16} =$
$\frac{8}{3} =$	$\frac{12}{4} =$	$\frac{25}{16} =$	$\frac{8}{5} =$	$\frac{27}{8} =$
$\frac{33}{20} =$	$\frac{4}{2} =$	$\frac{10}{9} =$	$\frac{24}{8} =$	$\frac{3}{3} =$
$\frac{9}{4} =$	$\frac{10}{10} =$	$\frac{15}{8} =$	$\frac{16}{3} =$	$\frac{33}{10} =$

Test G—Reduce 40 Fractions

Name _____ Time _____

$\frac{4}{20} =$		$\frac{2}{4} =$		$\frac{4}{12} =$		$\frac{6}{9} =$		$\frac{4}{8} =$
$\frac{4}{10} =$		$\frac{2}{16} =$		$\frac{10}{15} =$		$\frac{2}{8} =$		$\frac{10}{12} =$
$\frac{8}{12} =$		$\frac{2}{20} =$		$\frac{2}{6} =$		$\frac{6}{10} =$		$\frac{12}{24} =$
$\frac{14}{16} =$		$\frac{6}{12} =$		$\frac{10}{100} =$		$\frac{3}{15} =$		$\frac{6}{8} =$
$\frac{3}{6} =$		$\frac{10}{20} =$		$\frac{3}{12} =$		$\frac{3}{9} =$		$\frac{4}{16} =$
$\frac{8}{10} =$		$\frac{16}{32} =$		$\frac{4}{6} =$		$\frac{8}{16} =$		$\frac{5}{20} =$
$\frac{50}{100} =$		$\frac{2}{10} =$		$\frac{5}{15} =$		$\frac{9}{12} =$		$\frac{10}{16} =$
$\frac{2}{12} =$		$\frac{12}{16} =$		$\frac{7}{14} =$		$\frac{5}{10} =$		$\frac{4}{32} =$

$\frac{12}{16} =$	$\frac{16}{24} =$	$\frac{20}{6} =$	$\frac{6}{21} =$	$\frac{14}{8} =$
$\frac{18}{24} =$	$\frac{15}{6} =$	$\frac{6}{8} =$	$\frac{8}{3} =$	$\frac{5}{10} =$
$\frac{25}{12} =$	$\frac{24}{9} =$	$\frac{16}{20} =$	$\frac{18}{8} =$	$\frac{15}{24} =$
$\frac{8}{6} =$	$\frac{9}{6} =$	$\frac{10}{4} =$	$\frac{25}{100} =$	$\frac{6}{4} =$
$\frac{8}{24} =$	$\frac{10}{8} =$	$\frac{20}{6} =$	$\frac{20}{16} =$	$\frac{15}{20} =$
$\frac{16}{16} =$	$\frac{25}{10} =$	$\frac{21}{6} =$	$\frac{8}{12} =$	$\frac{12}{8} =$
$\frac{8}{12} =$	$\frac{12}{9} =$	$\frac{16}{32} =$	$\frac{20}{9} =$	$\frac{10}{3} =$
$\frac{20}{8} =$	$\frac{10}{6} =$	$\frac{12}{20} =$	$\frac{18}{12} =$	$\frac{12}{10} =$

$\frac{1}{5} =$	$\frac{3}{10} =$	$\frac{1}{4} =$	$\frac{1}{20} =$
$\frac{1}{8} =$	$\frac{1}{3} =$	$\frac{9}{10} =$	$\frac{7}{8} =$
$\frac{3}{5} =$	$\frac{1}{6} =$	$\frac{1}{2} =$	$\frac{1}{100} =$
$\frac{1}{50} =$	$\frac{5}{8} =$	$\frac{7}{10} =$	$\frac{3}{4} =$
$\frac{1}{25} =$	$\frac{2}{3} =$	$\frac{2}{5} =$	$\frac{5}{6} =$
$\frac{3}{8} =$	$\frac{4}{5} =$	$\frac{1}{10} =$	$\frac{1}{1000} =$

1% =	20% =	55% =	90% =	75% =
99% =	5% =	95% =	80% =	12% =
70% =	65% =	50% =	2% =	48% =
24% =	25% =	$33\frac{1}{3}\%$ =	40% =	15% =
60% =	30% =	4% =	35% =	36% =
45% =	8% =	10% =	$66\frac{2}{3}\%$ =	85% =

Fraction	Decimal	Percent
$\frac{1}{100}$		
$\frac{1}{50}$		
$\frac{1}{4}$		
$\frac{1}{8}$		
$\frac{1}{20}$		
$\frac{1}{3}$		
$\frac{7}{10}$		
$\frac{2}{5}$		
$\frac{1}{6}$		
$\frac{3}{8}$		
$\frac{1}{2}$		
$\frac{1}{10}$		
$\frac{1}{5}$		
$\frac{1}{1000}$		
$\frac{1}{12}$		
$\frac{2}{3}$		
$\frac{5}{8}$		
$\frac{4}{5}$		
$\frac{5}{6}$		
$\frac{3}{10}$		
$\frac{3}{4}$		
$\frac{7}{8}$		
$\frac{9}{10}$		
$\frac{3}{5}$		
$\frac{1}{25}$		

Math 87

Test Forms

Instructions

Tests are an important component of the Saxon program. We believe that concepts and skills should be continually tested. However, tests should only be administered after the concepts and skills have been thoroughly practiced. Therefore, we recommend that tests be administered according to the testing schedule which is printed on the back side of this page.

Note: Tests may be used more than once by using a separate answer sheet or writing answers on onionskin.

Math 87

Testing Schedule

Test to be administered:	Covers Material up through:	Give after teaching:
Test 1	Lesson 5	Lesson 10
Test 2	Lesson 10	Lesson 15
Test 3	Lesson 15	Lesson 20
Test 4	Lesson 20	Lesson 25
Test 5	Lesson 25	Lesson 30
Test 6	Lesson 30	Lesson 35
Test 7	Lesson 35	Lesson 40
Test 8	Lesson 40	Lesson 45
Test 9	Lesson 45	Lesson 50
Test 10	Lesson 50	Lesson 55
Test 11	Lesson 55	Lesson 60
Test 12	Lesson 60	Lesson 65
Test 13	Lesson 65	Lesson 70
Test 14	Lesson 70	Lesson 75
Test 15	Lesson 75	Lesson 80
Test 16	Lesson 80	Lesson 85
Test 17	Lesson 85	Lesson 90
Test 18	Lesson 90	Lesson 95
Test 19	Lesson 95	Lesson 100
Test 20	Lesson 100	Lesson 105
Test 21	Lesson 105	Lesson 110
Test 22	Lesson 110	Lesson 115
Test 23	Lesson 115	Lesson 120
Test 24	Lesson 120	Lesson 125
Test 25	Lesson 125	Lesson 130
Test 26	Lesson 130	Lesson 133
Test 27	Lesson 133	Lesson 133

1. If the product of 15 and 40 is divided by the sum of 15 and 45, what is the quotient?
2. List the whole numbers that are factors of 50.
3. Use digits and symbols to write "Negative seven is less than positive two."

4. Use words to write 21600050.

List the whole numbers from 1 to 10 that are divisors of:

5. 23
6. 73,500

7. Replace the circle with the proper comparison symbol.

$$-8 \bigcirc -11$$

8. Show this subtraction problem on a number line: $8 - 6$

9. Use digits to write eight million, one hundred thousand, sixty.

Find each missing number:

$$\begin{array}{r} 10. \quad \quad X \\ + \$4.30 \\ \hline \$15.00 \end{array}$$

$$\begin{array}{r} 11. \quad \quad Y \\ - 8860 \\ \hline 6300 \end{array}$$

$$\begin{array}{r} 12. \quad \quad Z \\ \times \quad 8 \\ \hline \$74.00 \end{array}$$

$$\begin{array}{r} 13. \quad 1426 \\ - \quad A \\ \hline 78 \end{array}$$

$$\begin{array}{r} 14. \quad 45 \\ \times \quad B \\ \hline 1575 \end{array}$$

$$\begin{array}{r} 15. \quad 32,800 \\ - \quad C \\ \hline 9360 \end{array}$$

Add, subtract, multiply, or divide, as indicated:

$$16. \quad 8 \cdot 12 \cdot 11$$

$$17. \quad 1000 - (560 - 79)$$

$$18. \quad 8 \overline{)46,392}$$

$$19. \quad 160(17)$$

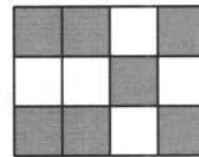
$$20. \quad \frac{\$29.80}{10}$$

- As the day of the festival drew near, the city swelled to 300,000 occupants. If the usual population of the city was 73,000, how many visitors had come to the city?
- Syd returned from the store with \$15.73 after spending \$86.09 on groceries. How much money did he have when he went to the store?
- Exactly 10,000 participants began the gruelling marathon. If only 4520 participants finished the marathon, how many dropped out along the way?
- Autumn was in the air. In the morning Ricky raked 1049 leaves. That afternoon he raked 2750 leaves. In all, how many leaves did Ricky rake that day?
- Arrange these numbers in order from least to greatest:

$$\frac{1}{3}, -3, 3, 0$$

- Draw and shade circles to represent $1\frac{3}{4}$.

- What fraction of the rectangle is shaded?
 - What fraction of the rectangle is not shaded?



- Subtract fifty-eight million from one hundred million and use words to write the difference.
- List the factors of 21.
 - List the factors of 48.
 - Which numbers are factors of both 21 and 48?
- Use digits and symbols to write "The product of one and three is less than the sum of one and three."

Find each missing number:

$$\begin{array}{r} 11. \quad 2320 \\ + \quad M \\ \hline 4760 \end{array}$$

$$\begin{array}{r} 12. \quad N \\ - \$8.75 \\ \hline \$9.55 \end{array}$$

$$\begin{array}{r} 13. \quad 35 \\ \times \quad P \\ \hline 910 \end{array}$$

Add, subtract, multiply, or divide, as indicated:

$$14. \quad \frac{3}{5} + \frac{1}{5}$$

$$15. \quad \frac{9}{11} - \frac{3}{11}$$

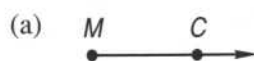
$$16. \quad \frac{3}{5} \times \frac{4}{7}$$

$$17. \quad 9 \overline{)74,309}$$

$$18. \quad 40(\$1.63)$$

$$19. \quad \frac{2}{5} \cdot \frac{2}{5} \cdot \frac{2}{5}$$

- Describe each figure as a line, ray, or segment. Then use a symbol and letters to name each figure.



1. In 1980 the population of Ashton was 96,212. By the 1990 census, the population had increased to 100,219. The population of Ashton in 1990 was how much greater than the population in 1980?
2. The beach balls arrived packed 15 in each case. If 80 cases were delivered, how many beach balls were there in all?
3. The product of 7 and 9 is how much greater than the sum of 7 and 9?
4. Sam spent \$5.85 for the ticket, \$2.75 for popcorn, and 60¢ for a drink. How much did he spend in all?
5. How many years were there from 1673 to 1699?

6. This sign is incorrect. Show two ways to correct this sign.

Yogurt
0.75¢ per cup

7. Draw shaded circles to show that $3\frac{1}{3} = \frac{10}{3}$.

8. Complete each equivalent fraction.

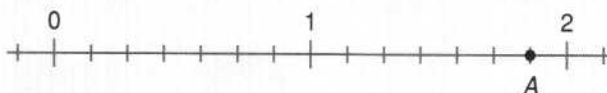
(a) $\frac{3}{4} = \frac{?}{12}$

(b) $\frac{2}{3} = \frac{?}{12}$

9. Use words to write 860900330.
10. (a) List the factors of 21.
(b) List the factors of 42.
(c) What is the greatest number that is a factor of both 21 and 42?
11. Name 3 segments in this figure in order of length from shortest to longest.



12. What mixed number is represented by point A on this number line?



Add, subtract, multiply, or divide, as indicated:

13. $\frac{7}{11} + \frac{5}{11}$

14. $\frac{2}{3} \cdot \frac{7}{4}$

15. $7 \overline{)15,409}$

16. $\frac{8840}{40}$

17. $\begin{array}{r} 735 \\ \times 14 \\ \hline \end{array}$

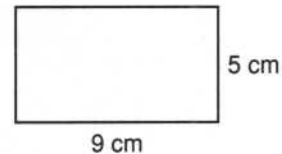
18. $(9 + 4)(3)$

Find each missing number:

19. $\begin{array}{r} Q \\ \times 15 \\ \hline 4500 \end{array}$

20. $\begin{array}{r} \$20.00 \\ - R \\ \hline \$8.43 \end{array}$

- Great Grandpa celebrated his sixty-fifth birthday in 1973. In what year was he born?
- The farmer harvested 8000 bushels of grain from 50 acres. The crop produced an average of how many bushels of grain for each acre?
- One twelfth of the students in the class were left-handed. What fraction of the students were not left-handed?
- Five hundred sixty-eight ducks floated peacefully on the lake. As the first shot rang out, all but 39 of the ducks flew away. How many ducks flew away?
- Forty-seven million is how much less than one billion? Use words to write the answer.
- Use words to write 278304011050.
- Use digits and symbols to write "Seven minus nine equals negative two."
- Find the perimeter of this rectangle.



- Reduce each fraction or mixed number.
 - $3\frac{24}{36}$
 - $\frac{9}{21}$
- Write $\frac{8}{3}$ as a mixed number.
- For each of these fractions, find an equivalent fraction that has a denominator of 36.
 - $\frac{3}{4} = \frac{?}{36}$
 - $\frac{4}{9} = \frac{?}{36}$
- What kind of angle is every angle of a rectangle?

Find each missing number:

$$\begin{array}{r} 13. \quad 7937 \\ - \quad G \\ \hline 1169 \end{array}$$

$$\begin{array}{r} 14. \quad \quad H \\ \times \quad 30 \\ \hline \$41.10 \end{array}$$

- Which of the following does not equal $2\frac{2}{3}$?
 - $\frac{11}{3}$
 - $2\frac{4}{6}$
 - $\frac{8}{3}$
 - $2\frac{10}{15}$

Add, subtract, multiply, or divide, as indicated:

$$16. \quad \frac{3}{4} + \frac{3}{4} + \frac{3}{4}$$

$$17. \quad \frac{9}{11} - \frac{7}{11}$$

$$18. \quad \frac{3}{5} \cdot \frac{5}{6}$$

$$19. \quad 6 \overline{)43,263}$$

$$20. \quad 13(11 + 13)$$

- At 1:00 p.m. there were 97 students in the cafeteria, 174 students on the playground, 17 students in the hallways, and 387 students in classrooms. How many students were there in all?
- Marlin had 3200 postage stamps which he kept in envelopes. If each envelope contained 25 stamps, how many envelopes of stamps did he have?
- Three hundred fifty-two million is how much less than two billion? Write the answer in words.
- Marlin was carefully sorting his stamps when the wind whipped up. Of the 1025 stamps on the table before the wind whipped up, only 187 remained. How many stamps did the wind blow off the table?
- Draw a diagram of this statement. Then answer the questions that follow.
Three fifths of the 200 spectators roared with laughter at the clown's antics, while the rest of the spectators were mildly amused.
 - How many spectators roared with laughter?
 - How many spectators were mildly amused?

6. Simplify $\frac{22}{6}$ to a reduced mixed number.

7. Write $4\frac{2}{3}$ as an improper fraction.

8. Write the prime factorization of 480.

9. For each fraction, write an equivalent fraction that has a denominator of 60.

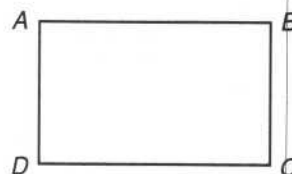
(a) $\frac{1}{6}$

(b) $\frac{2}{5}$

Refer to rectangle $ABCD$ to answer questions 10 and 11.

10. What side of the rectangle is parallel to side BC ?

11. If AB is 25 mm and BC is 15 mm, what is the perimeter of the rectangle?



Solve:

12. $63 + m = 129$

13. $x - 49 = 34$

14. $56 - w = 33$

15. $7y = 91$

Add, subtract, multiply, or divide, as indicated:

16. $\frac{3}{4} + \frac{3}{4} + \frac{3}{4}$

17. $\frac{7}{12} - \frac{5}{12}$

18. $\frac{9}{2} \cdot \frac{8}{3}$

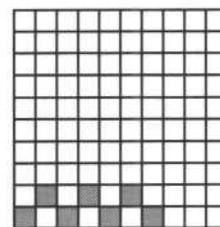
19. $\begin{array}{r} \$12.75 \\ \times 16 \\ \hline \end{array}$

20. $\frac{6000}{16}$

- Six hundred twenty-four books were packed into 26 boxes. If each box contained the same number of books, how many books were packed in each box?
- The Holy Roman Empire lasted from 962 to 1806. How many years did the Holy Roman Empire last?
- Jan went to the ball game with \$20.00 and returned with \$9.30. How much money did Jan spend at the ball game?
- Tom was engrossed in his 340-page book. He stopped on page 127 at noon to eat lunch. He stopped on page 253 to eat dinner. How many pages did Tom read during the afternoon?
- Draw a diagram of this statement. Then answer the questions that follow.

Three eighths of the 64 marbles in the bag were blue.

- How many of the marbles in the bag were blue?
 - How many of the marbles in the bag were not blue?
- What fraction of this square is shaded?
 - What fraction of this square is not shaded?



- Simplify each fraction or mixed number.

(a) $\frac{108}{8}$

(b) $8\frac{8}{6}$

(c) $\frac{120}{900}$

- Write the reciprocal of each of these numbers.

(a) $\frac{4}{9}$

(b) $6\frac{3}{4}$

(c) 9

- Complete each equivalent fraction.

(a) $\frac{5}{8} = \frac{?}{48}$

(b) $\frac{7}{16} = \frac{?}{48}$

Solve:

10. $350 = 700 - x$

11. $y - 48 = 25$

12. $12w = 264$

Add, subtract, multiply, or divide, as indicated:

13. $7 - 1\frac{5}{6}$

14. $5\frac{4}{5} + 6\frac{3}{5}$

15. $5\frac{1}{8} - 1\frac{7}{8}$

16. $3\frac{1}{3} \cdot 2\frac{2}{5}$

17. $3\frac{3}{4} \div 4\frac{1}{2}$

18. $2\frac{2}{3} \cdot 4$

19. $\frac{3}{4} \cdot \frac{5}{6} \cdot \frac{8}{15}$

20. $3\frac{2}{3} \div 4$

1. The 5 starters on the basketball team were tall. Their heights were 70 inches, 71 inches, 72 inches, 73 inches, and 84 inches. What was the average height of the 5 starters?
2. Marie bought 8 pounds of apples for \$0.82 per pound and paid for them with a ten-dollar bill. How much should she get back in change?
3. On the first day of their 2598-mile trip, the Curtis family drove 683 miles. How many more miles do they have to drive until they complete their trip?
4. One hundred six of the two hundred sixty-three students in the auditorium were boys. How many girls were in the auditorium?
5. Draw a diagram of this statement. Then answer the questions that follow.
The Daltons completed two sevenths of their 2170-mile trip the first day.
 - (a) How many miles did they travel the first day?
 - (b) How many miles of their trip do they still have to travel?
6. If the perimeter of a square is 3 feet, how many inches long is each side of the square?
7. Rewrite $\frac{2}{5}$ and $\frac{3}{4}$ so that they have common denominators.
8. (a) Round 44,283 to the nearest thousand.
(b) Round 44,283 to the nearest hundred.
9. Estimate the quotient when 29,376 is divided by 29.
10. Simplify: $\frac{90}{20}$
11. Replace the circle with the proper comparison symbol.
 $\frac{3}{5} \bigcirc \frac{5}{3}$
12. Find the least common multiple (LCM) of 8 and 12.
13. Write the prime factorization of 215.
14. What is the average of 5, 4, 9, 11, 12, 13, 25, 26, and 30?

Solve:

15. $7w = 4 \cdot 21$

16. $417 + a = 653$

17. $91 - d = 42$

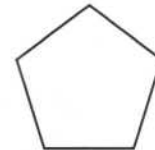
Add, subtract, multiply, or divide, as indicated:

18. $\frac{1}{4} + \frac{1}{3}$

19. $\left(\frac{3}{4} \cdot \frac{1}{3}\right) - \frac{1}{6}$

20. $1\frac{3}{5} \div 2\frac{1}{2}$

1. In the first four months of the year the Montgomery's electric bills were \$120.46, \$134.59, \$118.38, and \$96.29. What was their average electricity bill during the first four months of the year?
2. The price was reduced from four thousand, four hundred ninety-six dollars to one thousand, eight hundred ninety-three dollars. By how much was the price reduced?
3. A one-year subscription to the monthly magazine costs \$15.60. The regular newsstand price is \$1.95 per issue. How much is saved per issue by paying the subscription price?
4. Carlos ran one lap in one minute seven seconds. Orlando ran one lap six seconds faster than Carlos. How many seconds did it take Orlando to run one lap?
5. The perimeter of the square equals the perimeter of the regular pentagon. Each side of the pentagon is 16 cm. How long is each side of the square?



6. Draw a diagram of this statement. Then answer the questions that follow.

Four ninths of the 63 fish in the tank were guppies.

- (a) How many of the fish were guppies?
- (b) How many of the fish were not guppies?

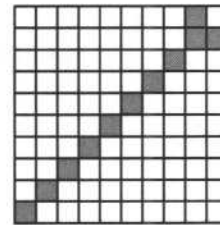
7. Find the least common multiple (LCM) of 7, 9, and 21.

8. Round 3849.4151

(a) to the nearest hundredth.

(b) to the nearest hundred.

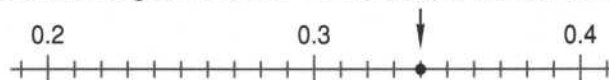
9. (a) What fraction of this square is not shaded?
(b) What decimal part of this square is not shaded?



10. Use words to write 100.113.

11. Use digits to write eighty-five hundred-thousandths.

12. What decimal number names the point marked with an arrow on this number line?



13. Simplify: $\frac{363}{36}$

14. What decimal number is halfway between 14 and 15?

Solve:

15. $18x = 9 \cdot 10$

16. $708 - y = 512$

Add, subtract, multiply, or divide, as indicated:

17. $4.3 + 1.79 + 11$

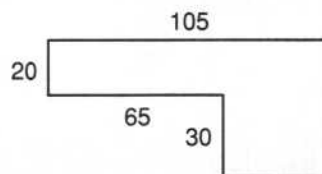
18. $42.61 - 3.095$

19. $1\frac{1}{5} - \left(\frac{1}{4} \cdot \frac{2}{5}\right)$

20. $\left(2\frac{1}{4} + 1\frac{1}{3}\right) \div \left(2 - 1\frac{1}{6}\right)$

- The bag contained only red marbles and white marbles. If the ratio of red marbles to white marbles was 5 to 4, what fraction of the marbles were white?
- John ran 4 laps of the track in 5 minutes 40 seconds.
 - How many seconds did it take John to run 4 laps?
 - John's average time for running each lap was how many seconds?
- The Curtis's car traveled an average of 21 miles per gallon of gas. At that rate, how far could the car travel on a full tank of 21 gallons?
- Draw a diagram of this statement. Then answer the questions that follow.
Three fourths of the 104 adults in the McGlaughlin clan were 5 feet tall or taller.
 - How many of the adults were less than 5 feet tall?
 - How many of the adults were 5 feet tall or taller?

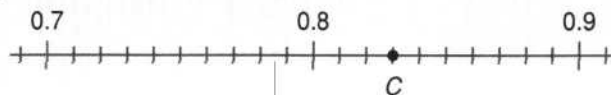
- What is the perimeter of the polygon?
Dimensions are in millimeters.



- AB is 35 mm. CD is 45 mm. AD is 110 mm. Find BC .



- The length of segment CD in problem 6 is 45 mm. What is the length of segment CD in centimeters?
- Round 0.910346 to the nearest thousandth.
- Use words to write 17.0703.
- Use digits to write four billion, two hundred fifty million, eight hundred sixty thousand.
- What decimal names point C on this number line?



- Write sixty-five and three hundredths

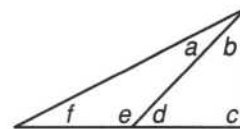
(a) as a decimal.

(b) as a mixed number.

- In this figure, which angle looks like

(a) a right angle?

(b) an obtuse angle?



Add, subtract, multiply, or divide, as indicated:

14. $0.12(0.06)$

15. $3\frac{1}{2} + 4\frac{5}{7}$

16. $5\frac{1}{3} - 3\frac{5}{6}$

17. $8\frac{1}{4} \cdot 1\frac{7}{11}$

18. $5\frac{4}{9} \div 7$

Solve:

19. $\frac{8}{10} = \frac{w}{15}$

20. $m + 0.72 = 1.54$

- The rectangle was 21 inches long and 6 inches wide. What was the ratio of its width to its length?
- Amber's test scores were 90, 91, 90, 87, 85, 95, 92, 80, 100, and 100. What was her average test score?
- Fifty-four thousandths is how much less than forty-three hundredths?

Refer to this election tally sheet to answer questions 4 and 5.

VOTE TOTALS

Judy				
Carlos				
Yolanda				
Khanh				

- The second-place candidate received how many more votes than the third-place candidate?
- What fraction of the votes did Yolanda receive?
- Draw a diagram of this statement. Then answer the questions that follow.
Three eighths of those who rode the Giant Gyro at the fair were euphoric. All the rest were vertiginous.
 - What fraction of those who rode the ride were vertiginous?
 - What was the ratio of euphoric to vertiginous riders?
- The perimeter of the rectangle is 68 cm. What is the length of the rectangle?
- Write 6.25 as a mixed number.
- Write $\frac{9}{5}$ as a decimal.
- Round $52.\overline{23}$ to five decimal places.
- Divide 34 by 5 and write the answer as a decimal number.
- Divide 4.3 by 9 and write the quotient with a bar over the repetend.



Solve:

13. $\frac{12}{8} = \frac{3}{m}$

14. $7 = 3.14 + x$

15. $0.091 = 1 - z$

Add, subtract, multiply, or divide, as indicated:

16. $5\frac{3}{5} + \frac{3}{4} + 2\frac{1}{2}$

17. $3\frac{1}{4} - \left(3 - 1\frac{5}{6}\right)$

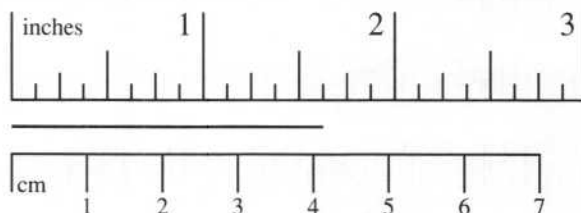
18. $3\frac{3}{4} \cdot 3\frac{1}{5} \cdot 6$

19. $4 \div 10\frac{2}{3}$

20. $2.5(0.4)(0.05)$

- Alaska became a state in 1959. Alaska was purchased 92 years prior to becoming a state. In what year was Alaska purchased?
- Brand X costs \$1.56 for 12 ounces. Brand Y costs 2¢ more per ounce. What is the cost of 15 ounces of Brand Y?
- The ratio of black beans to sweet peas in the garden was 12 to 5. What was the ratio of sweet peas to black beans?
- During the month of February, Hal's weekly grocery bills were \$109.60, \$114.56, \$85.90, and \$122.14. Find his average weekly grocery bill in February to the nearest dollar.
- Five and nine hundredths is how much less than nine? Write the answer in words.
- Draw a diagram of this statement. Then answer the questions that follow.
Seven eighths of the 72 buttons in the box had 5 holes.
 - What fraction of the buttons did not have 5 holes?
 - How many buttons did not have 5 holes?

- Find the length of this segment
 - to the nearest centimeter.
 - to the nearest eighth of an inch.



- Write 0.24 as a reduced fraction.
- Divide 4.8 by 11 and write the answer with a bar over the repetend.

10. Simplify: $\frac{490}{560}$

11. If the perimeter of a square is 32 inches, what is its area?

Solve:

12. $\frac{49}{56} = \frac{21}{f}$

13. $3w = 8.4$

14. $5 - m = 1.36$

Add, subtract, multiply, or divide, as indicated:

15. $8^2 - 3^3$

16. $\sqrt{64} - \sqrt{36}$

17. $14\frac{11}{12} - 8\frac{3}{8}$

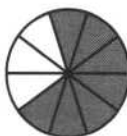
18. $5\frac{3}{7} \div 3\frac{4}{5}$

19. 0.245×10^3

20. $0.1004 \div 0.08$

- At 23 miles per gallon, how far could a car travel on 15.1 gallons of gas?
- Fifty-six and two hundred seven thousandths is how much less than one hundred five and three hundredths?
- When twelve squared is divided by the square root of 9, what is the quotient?
- Draw a diagram of this statement. Then answer the questions that follow.
Five ninths of 4950 voters supported Mayor Roland.
 - How many voters did not support Mayor Roland?
 - What was the ratio of voters who supported the mayor to those who did not support the mayor?

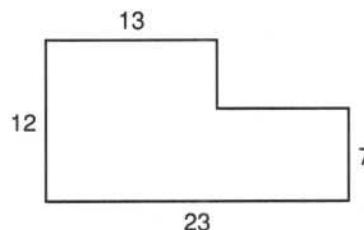
- What percent of the circle is shaded?



- Write each percent as a reduced fraction or mixed number.
 - 18%
 - 180%
- Write each fraction or mixed number as a percent.
 - $3\frac{3}{4}$
 - $\frac{1}{3}$
- Change 70 inches to feet and inches.
- Josephine bunted the ball and ran 90 feet to first base. How many yards did she run?
- Divide 464 by 7 and write the answer as a mixed number.

Refer to this hexagon to answer questions 11 and 12.
Dimensions are in feet.

- What is the perimeter of the hexagon?
- What is the area of the hexagon?



Solve:

$$13. \frac{45}{50} = \frac{27}{k}$$

$$14. x + 5.26 = 7$$

$$15. m - \frac{5}{6} = \frac{1}{12}$$

Add, subtract, multiply, or divide, as indicated:

$$16. 1^3 + 2^4 + 3^4 - \sqrt{49}$$

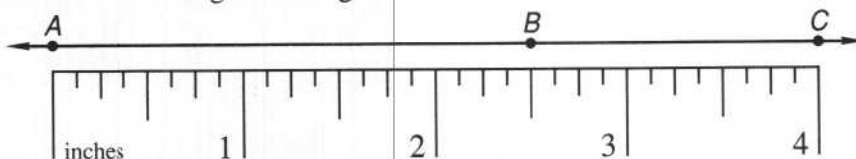
$$17. 0.04 \times 7.5 \times 10^4$$

$$18. \frac{27 \text{ miles}}{\text{hour}} \cdot 5 \text{ hours}$$

$$19. \begin{array}{r} 4 \text{ yd } 1 \text{ ft } 8 \text{ in.} \\ + \quad 2 \text{ ft } 5 \text{ in.} \\ \hline \end{array}$$

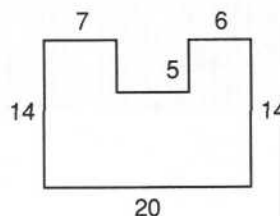
$$20. 3\frac{1}{4} \div \left(2\frac{2}{5} \cdot 1\frac{1}{4}\right)$$

- The ratio of schooners to skiffs in the bay was 7 to 5. If there were 63 schooners in the bay, how many skiffs were there?
- The average of four numbers is 98. If three of the numbers are 86, 87, and 91, what is the fourth number?
- A one-quart container of milk costs 73¢. A case of 12 one-quart containers costs \$7.68. How much is saved per quart by buying the milk by the case?
- Segment AB is how much longer than segment BC ?



- Draw a diagram of this statement. Then answer the questions that follow.
Three tenths of the 40 students earned an A.
 (a) How many students earned an A?
 (b) What percent of the students earned an A?
- Write forty billion in scientific notation.
- Write 1.86×10^7 in standard form.
- Use a unit multiplier to convert 800 mm to cm.
- Write 410% as a mixed number.
- Don is 5 feet 11 inches tall. Bob is 68 inches tall. Don is how many inches taller than Bob?

Refer to this figure to answer questions 11 and 12.
Dimensions are in inches.



- What is the area of the figure?
- What is the perimeter of the figure?

Solve:

13. $5.64 + w = 10$

14. $\frac{a}{8} = \frac{45}{10}$

Add, subtract, multiply, or divide, as indicated:

15. $13^2 - 2^5 - 3^3 - \sqrt{169}$

16.
$$\begin{array}{r} 8 \text{ yd } 2 \text{ ft } 9 \text{ in.} \\ + \quad 2 \text{ ft } 5 \text{ in.} \\ \hline \end{array}$$

17. $2\frac{1}{4} + 2\frac{5}{6} + 3\frac{5}{8}$

18. $6\frac{2}{3} \cdot 5\frac{1}{4} \cdot 2\frac{1}{10}$

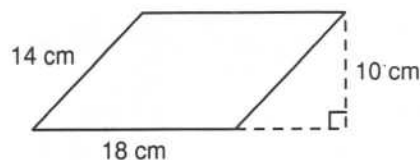
19. $0.4(0.25)(0.01)$

20. $4.8 \div 0.016$

1. If a half gallon of milk costs \$1.24, what is the cost per pint?
2. The cookie recipe called for oatmeal and raisins in the ratio of 3 to 1. If 4 cups of oatmeal were called for, how many cups of raisins were needed?
3. Marcie ran the 400-meter race 3 times. Her fastest time was 52.3 seconds. Her slowest time was 56.3 seconds. If her average time was 54.0 seconds, what was her time for the third race?
4. It is $2\frac{1}{2}$ miles to the end of the trail. If Paula runs to the end and back in 60 minutes, what is her average speed in miles per hour?
5. Fifty-four million, seven hundred thousand is how much greater than five million, eighty-nine thousand? Write the answer in words.
6. Draw a diagram of this statement. Then answer the questions that follow.
Only four tenths of the print area of the newspaper carried news. The rest of the area was filled with advertisements.
(a) What percent of the print area was filled with advertisements?
(b) What was the ratio of news area to advertisement area?
7. Write 0.00205 in scientific notation.
8. Write 5.62×10^{-5} in standard form.
9. Use a unit multiplier to convert 1760 yards to feet.
10. Write $\frac{1}{25}$ as a percent.

Refer to this parallelogram to answer questions 11 and 12.

11. What is the perimeter of the parallelogram?
12. What is the area of the parallelogram?



Solve:

$$13. \frac{4}{18} = \frac{n}{27}$$

$$14. p + 4.2 = 5$$

Add, subtract, multiply, or divide, as indicated:

$$15. 10 + 10 \times 10 - 10 \div 10$$

$$16. 10^4 - \sqrt{121} + 3^3$$

$$17. \begin{array}{r} 5 \text{ yd} \\ - 2 \text{ yd } 2 \text{ ft } 11 \text{ in.} \\ \hline \end{array}$$

$$18. 5\frac{7}{9} + \left(2\frac{1}{3} - 1\frac{1}{2}\right)$$

$$19. 7\frac{1}{2} \div \left(2\frac{2}{5} \div 4\right)$$

$$20. 4.3(0.05)(0.005)$$

1. At 9:00 a.m. Marsha found a parking meter that still had 5 minutes until it expired. She quickly put a quarter, 1 dime, and a nickel into the meter and went to her meeting. If 5¢ buys 15 minutes of parking time, at what time will the meter expire?

Use the information in this paragraph to answer questions 2 and 3.

The Jenkins started their trip with a full tank of gas and 48,961 miles on their car. They stopped and filled the gas tank seven hours later with 14.0 gallons of gas. At that time the car's total mileage was 49,381.

2. What was the car's average speed in miles per hour for the first seven hours of the trip?
3. The Jenkins' car traveled an average of how many miles per gallon during the first seven hours of the trip?
4. The ratio of cetaceans to fish in the harbor was 3 to 13. How many fish were in the harbor if there were 390 cetaceans?
5. Draw a diagram of this statement. Then answer the questions that follow.

Exit polls showed that 8 out of every 10 voters cast their ballot for the incumbent.

- (a) According to the exit polls, what percent of the voters cast their ballot for the incumbent?
- (b) According to the exit polls, what fraction of the voters did not cast their ballot for the incumbent?

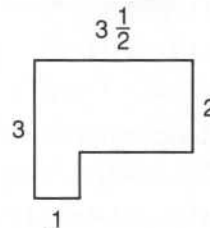
6. What number is $\frac{3}{5}$ of 6?
7. Write two millionths in scientific notation.
8. Write 1.3×10^6 in standard form.
9. Use a unit multiplier to convert 9 yards to inches.
10. Sketch a number line to show this addition problem: $(-3) + (+5)$

11. Complete the table.

FRACTION	DECIMAL	PERCENT
(a)	0.6	(b)
(c)	(d)	120%

12. Evaluate: $ab - a + bc$ if $a = 4$, $b = 2$, and $c = 3$

Refer to this figure to answer questions 13 and 14.
Dimensions are in inches.



13. What is the perimeter?
14. What is the area?

Solve:

15. $\frac{15}{25} = \frac{9}{m}$

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

Add, subtract, multiply, or divide, as indicated:

17. $10 - (8 - 3) - 3 \div 3 + 1$

18.
$$\begin{array}{r} 2 \text{ gal } 2 \text{ qt } 2 \text{ pt} \\ - 1 \text{ gal } 3 \text{ qt } 1 \text{ pt } 2 \text{ oz} \\ \hline \end{array}$$

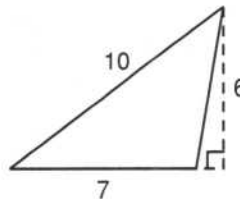
19. $4\frac{1}{3} - \left(2\frac{1}{3} \cdot 1\frac{1}{2}\right)$

20. $0.01 \div (0.01 \div 0.001)$

- Six hundred ninety-four ten-thousandths is how much more than fifty-seven thousandths? Write the answer in words.
- Justin worked for 7 hours and earned \$38.50. How much did he earn per hour?
- Three sevenths of the possible outcomes were favorable, while the rest of the possible outcomes were unfavorable.
 - What fraction of the possible outcomes were unfavorable?
 - What was the ratio of favorable to unfavorable outcomes?
- What is the average of $4\frac{1}{2}$, $3\frac{1}{3}$, 2, and $2\frac{1}{6}$?
- What number is 25% of 96?
- Draw a diagram of this statement. Then answer the questions that follow.
Joel gave $\frac{1}{4}$ of his 236 postage stamps to his sister.
 - What percent of his postage stamps did Joel give to his sister?
 - How many postage stamps did Joel have left?
- Write eight hundred-thousandths in scientific notation.
- Write 2.4×10^{-4} in standard form.
- Replace the circle with the proper comparison symbol.
4.5 km \bigcirc 4500 m
- Divide 7 by 0.27 and write the answer rounded to the nearest whole number.
- Find this sum: $(+6) + (-11) + (+5) + (-7)$
- Complete the table.

FRACTION	DECIMAL	PERCENT
$\frac{1}{8}$	(a)	(b)
(c)	0.12	(d)

- Find the area of this triangle. Dimensions are in centimeters.



- Evaluate: $ab + a + b$ if $a = \frac{1}{4}$ and $b = \frac{1}{5}$

Solve:

$$15. \frac{w}{45} = \frac{8}{20}$$

$$16. 2.5c = 0.125$$

Add, subtract, multiply, or divide, as indicated:

$$17. 2 \text{ m} - 25 \text{ cm} = \underline{\hspace{2cm}} \text{ cm}$$

$$18. 4\frac{1}{4} + \left(2\frac{1}{6} - 1\frac{1}{3}\right)$$

$$19. 5\frac{1}{4}\left(4 \div 1\frac{1}{2}\right)$$

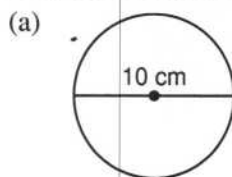
$$20. 0.5(0.1)(1.2)$$

- Maria ran 4 laps of the track at the same pace. If it took $4\frac{1}{2}$ minutes to run the first 3 laps, how long did it take her to run all 4 laps?
- The average of three numbers is 3. If the greatest is 4.6 and the least is 1.4, what is the third number?
- The ratio of left-handed to right-handed students in the school was 3 to 14. If the total number in both categories was 714, how many right-handed students were in the school?
- How far will a migrating duck fly in 7 hours at an average speed of 21 miles per hour?
- Draw a diagram of this statement. Then answer the questions that follow.

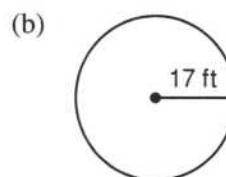
Tom has read $\frac{3}{8}$ of the 480 pages in the book.

- How many pages are left to read?
- What is the ratio of pages read to pages not yet read?

- Find the circumference of each circle.

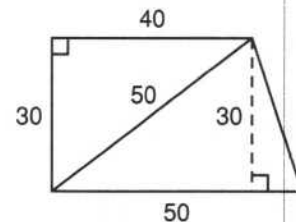


Use 3.14 for π



Leave π as π

Refer to the figure to answer questions 7 and 8.
Dimensions are in millimeters.



- What is the area of the right triangle?
- What is the area of the isosceles triangle?
- Write 3,600,000,000 in scientific notation.

- What is 25% of 1600?

- What number is $\frac{5}{8}$ of 24?

- Complete the table.

FRACTION	DECIMAL	PERCENT
$\frac{1}{3}$	(a)	(b)
(c)	0.32	(d)

- Find this sum.

$$(-5) + (-5) + (+7) + (-2)$$

- Use a unit multiplier to convert 10 tons to pounds.

- Evaluate: $\frac{x+y}{xy}$ if $x = \frac{1}{8}$ and $y = \frac{1}{3}$

Solve:

$$16. \quad \frac{3}{4} + n = 2\frac{1}{8}$$

$$17. \quad \frac{y}{16} = \frac{1.2}{0.6}$$

Add, subtract, multiply, or divide, as indicated:

$$18. \quad 1 \text{ kg} - 705 \text{ g} = \text{ ______ g}$$

$$19. \quad 5^2 - \sqrt{10^2 - 8^2}$$

$$20. \quad 3\frac{3}{4} \div \left(5\frac{1}{2} - 2\frac{1}{5}\right)$$

- It was 96 kilometers from Perry to Medford. David raced to Medford and idled back. If the round trip took 8 hours, what was his average speed in kilometers per hour?
- The ratio of dogs to cats in the neighborhood was 3 to 7. If there were 42 dogs in the neighborhood, how many cats were there?
- Using a tape measure, Becky Jo found that the circumference of the great redwood was 900 cm. She estimated that its diameter was 300 cm. Was her estimate a little too large or a little too small? Why?
- Pistachios were priced at 3 pounds for \$6.99.
 - What was the price per pound?
 - How much would 10 pounds of pistachios cost?
- If the product of six tenths and three tenths is subtracted from the sum of two tenths and four tenths, what is the difference?
- Draw a diagram of this statement. Then answer the questions that follow.

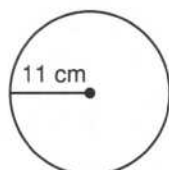
Three fifths of the baker's 60 cookies were chocolate cookies.

- How many of the baker's cookies were chocolate?
 - What percent of the baker's cookies were not chocolate cookies?
- Replace the circle with the proper comparison symbol.

$$3 - 5 \bigcirc 3 + (-5)$$

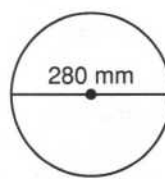
- Find the circumference of each of these circles.

(a)



Leave π as π

(b)



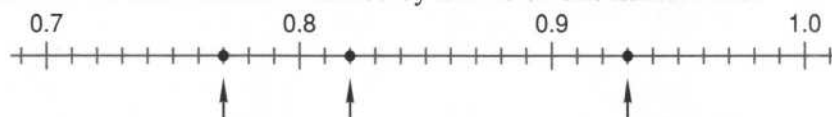
Use $\frac{22}{7}$ for π

- Write each of these numbers in scientific notation.

(a) 11×10^{-7}

(b) 11×10^7

- What is the sum of the three numbers marked by arrows on this number line?



- What number is 15% of 1400?

- What number is $\frac{1}{8}$ of 100?

- Complete the table.

- Simplify: $(-6) + (-3) - (-1) - (+4)$

- Use a unit multiplier to convert 8000 g to kg.

- Evaluate: $ab - (a - b)$ if $a = 0.5$ and $b = 0.4$

Solve:

17. $q + 36 = 42.6$

18. $5n = 32$

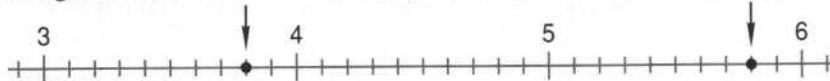
Add, subtract, multiply, or divide, as indicated:

19. $8.6 \times 5\frac{1}{4}$ (decimal)

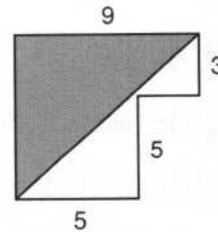
20. $1\frac{1}{3} \div \left(3\frac{1}{2} \cdot 2\right)$

FRACTION	DECIMAL	PERCENT
$\frac{1}{12}$	(a)	(b)
(c)	(d)	18%

- Write a proportion to solve this problem. In the land of Feather, 6 lifts equal 5 zooms. How many lifts are equal to 35 zooms?
- What is the average of the 2 numbers marked by arrows on this number line?



Refer to this figure to answer questions 3 and 4.
Dimensions are in centimeters.



- What is the perimeter of the hexagon?
- What is the area of the shaded region?
- Four squared is how much greater than the square root of 4?
- Use a ratio box to solve this problem. Five hundred fifty students attended the assembly. If the ratio of boys to girls in the assembly was 6 to 5, how many girls attended the assembly?
- Use a unit multiplier to convert 6.4 g to milligrams.
- Draw a diagram of this statement. Then answer the questions that follow.
In the first fifth of the season the Madrigals played 12 games.
 - How many games did the Madrigals play during the whole season?
 - If the Madrigals won $\frac{2}{3}$ of their games during the whole season, how many games did they win?

Write an equation to solve Problems 9 and 10.

- Seventy-two is four fifths of what number?
- One-tenth of what number is 201?
- Simplify:

(a) $-9(-2)$

(b) $-9(+6)$

(c) $\frac{-9}{-3}$

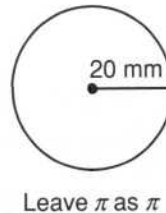
(d) $\frac{9}{-1}$

- If each edge of a cube is 5 cm, what is the volume of the cube?
- Find the circumference of each of these circles.

(a)



(b)



- Complete the table.

- Evaluate: $10m - (my - y^2)$ if $m = 10$ and $y = 6$

Solve and check. Show your work.

16. $\frac{2}{3}y = 8$

17. $m + 1.6 = 3$

Add, subtract, multiply, or divide, as indicated:

18. $\frac{\$600}{1 \text{ wk}} \cdot \frac{1 \text{ wk}}{5 \text{ days}} \cdot \frac{1 \text{ day}}{8 \text{ hr}}$

19. $(-7) - (-4) + (-3)$

20. $3\frac{3}{4} \div \left(1\frac{2}{3} + 2\frac{1}{2}\right)$

FRACTION	DECIMAL	PERCENT
$\frac{1}{5}$	(a)	(b)
(c)	0.45	(d)

- Tim mowed lawns for 2 hours and earned \$4.50 per hour. Then he washed windows for 4 hours and earned \$3.45 per hour. What was Tim's average earnings per hour for all 6 hours?
- Evaluate: $x + (x^2 - xy) - y$ if $x = 5$ and $y = 4$
- Replace the circle with the proper comparison symbol.

$$a \bigcirc b \text{ if } a - b = 1$$

Use a ratio box to solve Problems 4 and 5.

- When Nelson cleaned his room he found that the ratio of clean clothes to dirty clothes was 3 to 4. If 35 articles of clothing were discovered, how many were clean?
- In 25 minutes, 400 customers entered the attraction. At this rate, how many customers would enter the attraction in 1 hour?
- The diameter of a round skating rink is 15 m. Find the circumference of the rink to the nearest meter.
- Use a unit multiplier to convert $3\frac{1}{2}$ qts to pints.
- Graph this inequality on a number line: $x > -5$
- Nathan found that the 14 inches from his knee joint to his hip joint was $\frac{1}{4}$ of his total height. What was Nathan's total height in inches?
- Simplify:

(a) $\frac{400}{-5}$

(b) $\frac{-720}{-12}$

(c) $15(-20)$

(d) $+12(80)$
- Complete the table.

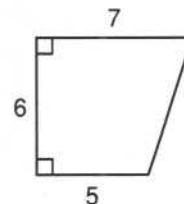
FRACTION	DECIMAL	PERCENT
$\frac{5}{6}$	(a)	(b)
(c)	0.6	(d)

Write an equation to solve Problems 12 and 13.

- Six hundred is $\frac{4}{9}$ of what number?
- What number is 35% of 40?

- Simplify: $\frac{5\frac{1}{3}}{100}$

- Find the area of this trapezoid. Dimensions are in meters.



Solve and check. Show all steps.

- $\frac{3}{5}m = 48$
- $1.5 = x - 0.08$

Add, subtract, multiply, or divide, as indicated:

- $\frac{3^3 + 2 \cdot 5 - 3 \cdot 2^2}{\sqrt{25}}$
- $4\frac{2}{3} \div 1.4$ (fraction)
- $-26 - (-42) + (+35)$

- The team's ratio of games won to games played was 5 to 6. If the team played 36 games, how many games did the team fail to win?
- Find the (a) mean, (b) median, (c) mode, and (d) range for the following scores:
60, 70, 90, 70, 80, 65, 95, 80, 100, 60
- Elmo was chagrined to find that the ratio of dandelions to peonies in the garden was 11 to 4. If there were 36 peonies in the garden, how many dandelions were there?
- Use a unit multiplier to convert 0.47 liters to milliliters.
- Graph $x \leq -3$ on a number line.

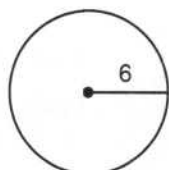
Use a ratio box to solve Problems 6 and 7.

- If sound travels 2 miles in 10 seconds, how far does sound travel in 2 minutes?
- Before the clowns arrived, only 35% of the children wore happy faces. If 117 children did not wear happy faces, how many children were there in all?
- Draw a diagram of this statement. Then answer the questions that follow.
Forty-five thousand dollars was raised in the charity drive. This was nine tenths of the goal.
 - The goal of the charity drive was to raise how much money?
 - The drive fell short of the goal by what percent?

- Compare: $2a$ \bigcirc a^2 if a is a whole number

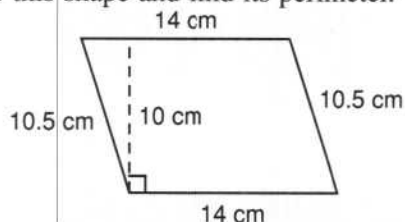
- A certain rectangular prism is 4 inches long, 2 inches wide, and 3 inches high. Sketch the figure and find its volume.

- Find the area of this circle. Dimensions are in inches.



Use 3.14 for π

- Name this shape and find its perimeter.



- Complete the table.

FRACTION	DECIMAL	PERCENT
$\frac{3}{40}$	(a)	(b)
(c)	(d)	$3\frac{1}{3}\%$

- Find the area of the shape in Problem 13.

- Multiply $(2.5 \times 10^6)(1.3 \times 10^9)$ and write the product in scientific notation.

Solve and check. Show all steps.

- $15.4 = 1.4p$

- $z + \frac{4}{9} = 1\frac{1}{5}$

Add, subtract, multiply, or divide, as indicated:

- $3\{25 - [7^2 - 4(11 - 4)]\}$

- $0.7 \div \left(7\frac{1}{2} - 2\frac{5}{6}\right)$

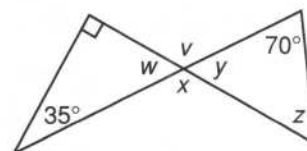
- $(-3) + (-4) - (-7) + (-8)$

- In the forest there were lions and tigers and bears. The ratio of lions to tigers was 3 to 2. The ratio of tigers to bears was 3 to 4. If there were 9 lions, how many bears were there? (*Hint: First find how many tigers there were.*)
- Bill measured the shoe box and found that it was 25 cm long, 15 cm wide, and 8 cm high. What was the volume of the shoe box?
- A baseball player's batting average is found by dividing the number of hits by the number of at-bats and rounding the result to the nearest thousandth. If Erika had 24 hits in 57 at-bats, what was her batting average?
- Use two unit multipliers to convert 81 square feet to square yards.
- Graph the negative integers greater than -3 .
- Draw a diagram of this statement. Then answer the questions that follow.
Jimmy bought the shirt for \$36. This was $\frac{3}{4}$ of the regular price.
(a) What was the regular price of the shirt?
(b) Jimmy bought the shirt for what percent of the regular price?

Use the information in this figure to answer questions 7 and 8.

7. What is $m\angle w$?

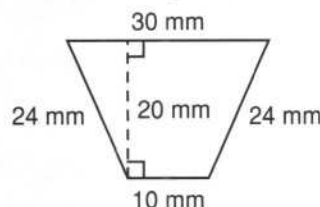
8. What is $m\angle z$?



9. What is the circumference of this circle?



10. Find the area of this trapezoid.



11. Compare: a^2 a if $a = 0.9$

12. Complete the table.

FRACTION	DECIMAL	PERCENT
(a)	0.06	(b)

- Use a ratio box to solve this problem. Forty-five percent of the 5000 fast food customers ordered a hamburger. How many of the customers did not order a hamburger?
- Forty is what percent of 200?
- How many degrees is $\frac{1}{6}$ of a full circle?
- Multiply $(1.25 \times 10^{-3})(8 \times 10^{-5})$ and write the product in scientific notation.

Solve and check. Show all steps.

17. $\frac{4}{9}p = 112$

18. $12.3 = 5.73 + f$

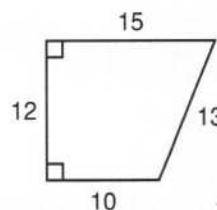
Add, subtract, multiply, or divide, as indicated:

19. $4.2 \times \frac{1}{20} \times 10^2$ (decimal)

20. $(-5) - (+6)(-2) - (-3)(-4)$

- After 3 tests Amanda's average score was 88. What score must she earn on her next test to have a 4-test average of 90?
- Forty-five of the 80 students in the club were girls. What was the ratio of boys to girls in the club?
- Three dozen juice bars cost \$4.80. At that rate, what would be the cost of 60 juice bars?
- The county's population increased 20% from 1980 to 1990. If the population in 1980 was 250,000, what was the population in 1990?
- Due to the unexpected cold weather, the cost of tomatoes increased 50 percent in one month. If the cost after the increase was 60¢ per pound, what was the cost before the increase?
- Write an equation to solve this problem. Sixty is what percent of 80?
- Use two unit multipliers to convert 1000 cm^2 to mm^2 .
- If $x = -3$ and $y = 4x - 1$, then y equals what number?

- Find the area of this trapezoid. Dimensions are in millimeters.
- The price of the stereo was \$96.00. The tax rate was 6%.
 - What was the tax on the stereo?
 - What was the total price of the stereo including tax?



- Multiply $(7 \times 10^{-4})(4 \times 10^8)$ and write the result in scientific notation.
- Complete the table.

FRACTION	DECIMAL	PERCENT
$3\frac{1}{3}$	(a)	(b)
(c)	(d)	2%

- Graph the whole numbers less than 3.

Solve and check. Show all steps.

14. $1\frac{2}{3}x = 60$

15. $m - 0.45 = 5.4$

Add, subtract, multiply, or divide, as indicated:

16. $(2 \cdot 5)^2 - 2(5)^2$

17. $1 \text{ L} - 200 \text{ mL}$

18. $4 - \left(2\frac{2}{3} - 1.5\right)$ (fraction)

19. $\frac{(-6)(-10)(-8)}{(-3)(-5)(-4)}$

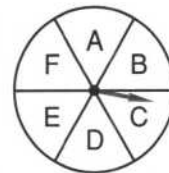
20. $6 - 9 + 4 - 15 + 3(-4)$

- Jorge's average score on the first 3 tests was 88. His average score on the next 5 tests was 84. What was his average score on all 8 tests?
- Use a ratio box to solve this problem. After working 6 months, Gina received a raise of 25%. If her previous pay was \$7.20 per hour, what was her hourly pay after the raise?
- Write an equation to solve this problem. Seventy is what percent of 50?
- Use two unit multipliers to convert 1.6 m^2 to cm^2 .
- Draw a diagram of this statement. Then answer the questions that follow.
Five eggs were cracked. This was $\frac{1}{6}$ of the total number of eggs in the flat.
 - How many eggs were in the flat?
 - What percent of the eggs in the flat were not cracked?

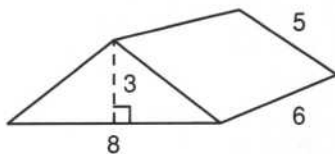
6. Evaluate: $\frac{a+b}{c}$ if $a = -6$, $b = -4$, and $c = -2$

7. The perimeter of a certain square is 12 inches. Find the area of the square in square inches.

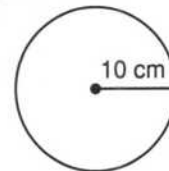
8. What is the probability of this spinner
- stopping on a vowel?
 - stopping on a consonant?



9. Find the volume of this triangular prism. Dimensions are in centimeters.



10. Find the area of this circle.



Use 3.14 for π

- Find the total price, including 6% tax, of 20 square yards of carpeting priced at \$18.00 per square yard.
- What is $33\frac{1}{3}\%$ of \$42.00?
- At 2:00 p.m. the hands of a clock form an angle that measures how many degrees?
- Multiply $(4 \times 10^3)(8 \times 10^{-8})$ and write the result in scientific notation.

Solve and check. Show all steps.

15. $0.6m + 1.5 = 4.8$

16. $\frac{2}{3}x - 6 = 18$

Add, subtract, multiply, or divide, as indicated:

17. $3^3 - \sqrt{49} + 5 \cdot 2^4$

18. $3 \text{ yd } 2 \text{ ft } 9 \text{ in.} + 8 \text{ in.}$

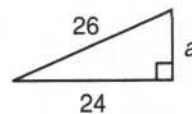
19. $2.7\left(1\frac{2}{3} \div 3\right)$ (fraction)

20. $\frac{-5(-4) - 3(-2)(-1)}{(-2)}$

- The dinner bill totaled \$24.00. Daniel left a 15% tip. How much money did Daniel leave for a tip?
- The 200-kilometer drive took $2\frac{1}{2}$ hours. What was the average speed of the drive in kilometers per hour?

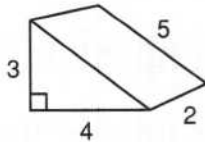
Use a ratio box to solve Problems 3 to 5.

- The $\frac{1}{12}$ scale model of the rocket stood 48 inches high. What was the height of the actual rocket?
- Sam saved \$35 buying the suit at a 20% off sale. What was the regular price of the suit?
- A merchant bought an item for \$30.00 and sold it for 50% more. For what price did the merchant sell the item?
- What is 6.5% of \$48.00? Write an equation and solve it.
- (a) What are the coordinates of the fourth vertex of a rectangle whose other vertices are (4, 3), (-2, 3), and (-2, -1)?
(b) What is the area of the rectangle?
- Use the Pythagorean theorem to find a .
Dimensions are in inches.

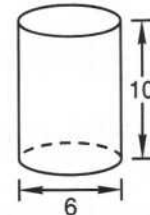


Find the volume of the solids shown in Problems 9 and 10. Dimensions are in centimeters.

9.

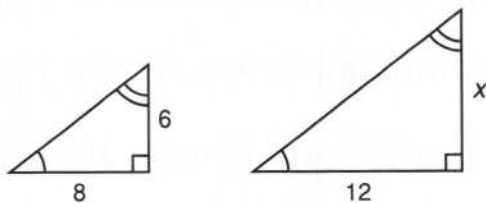


10.

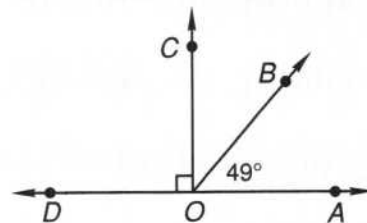


Use 3.14 for π

11. These two triangles are similar. Find x .



12. In this figure, find the measure of $\angle BOC$.



13. Arrange in order from least to greatest:

$$3, 3^2, \sqrt{3}, -3$$

14. Find the area of a circle whose radius is 6 inches. Use 3.14 for π .

15. Which of these numbers is between 7 and 9?

A. $\sqrt{8}$

B. $\sqrt{79}$

C. $\sqrt{97}$

Solve:

16. $2\frac{2}{3}x + 6 = 14$

17. $\frac{20}{w} = \frac{45}{3.6}$

Add, subtract, multiply, or divide, as indicated:

18. $10.5\left(3 - 1\frac{4}{7}\right)$

19. $\sqrt{10^2} - 8^2$

20. $\frac{(-18) - (-2)(-3)}{(-3) + (-2) - (-4)}$

1. Find the (a) mean, (b) median, (c) mode, and (d) range for the following scores:

88, 92, 89, 95, 88, 90, 89, 88, 87, 84

2. One card is drawn from a normal deck of 52 cards. What is the probability of drawing a red 5?

Use a ratio box to solve Problems 3 to 5.

3. Marla can exchange \$200 for 300 Swiss francs. At that rate, how many dollars would a 210 franc Swiss watch cost?
4. The bag was filled with red marbles and blue marbles in the ratio of 5 to 7. If there were 180 marbles in the bag, how many were red?
5. During the off-season, the room rates at the resort were reduced 35%. If the usual rate was \$120 per day, what was the off-season rate?

Write an equation to solve Problems 6 and 7.

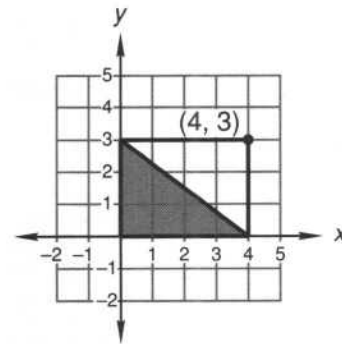
6. What is 7.5% of \$80.00?

7. Ten percent of what number is 350?

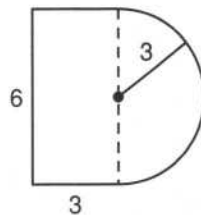
8. What is the area of the shaded region of this rectangle?

9. Use the formula $t = 1.06p$ to find t when p is 8.5.

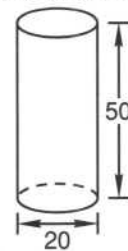
10. Make a table that shows 3 pairs of numbers for the function $y = 2x - 1$. Then graph these pairs on the coordinate plane and draw a line through these points.



11. Find the perimeter of this figure. Dimensions are in centimeters. Use 3.14 for π .



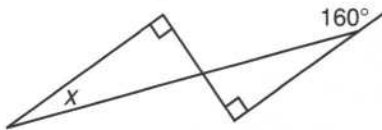
12. Find the volume of this right circular cylinder. Dimensions are in centimeters.



Use 3.14 for π

13. What is the surface area of a cube whose sides are 3 inches long?

14. Find $m\angle x$ in this figure.



15. The triangles are similar. Find y .



Solve and check. Show all steps.

16. $1\frac{2}{3}x - 15 = 45$

17. $\frac{m}{35} = \frac{1.6}{14}$

Add, subtract, multiply, or divide, as indicated:

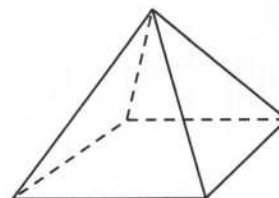
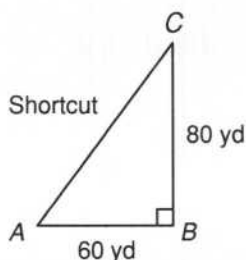
18. $100 - \{80 - 3[2 + 2(3^2)]\}$

19. $3\frac{3}{4} + 1\frac{1}{4} \cdot 8$

20. $\frac{(-6) - (7)(-4) - 1}{(-1) + (-2)}$

Use a ratio box to solve Problems 1 to 3.

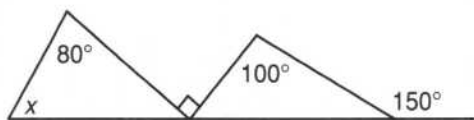
- The regular price was \$21.00, but the item was on sale for 30% off. What was the sale price?
- If 24 kilograms of seed cost \$37, how much would 42 kilograms cost at the same rate?
- An item was on sale for 30% off the regular price. If the sale price was \$21.00, what was the regular price?
- Ten billion is how much greater than nine hundred million? Write the answer in scientific notation.
- The median of these numbers is how much less than the mean?
1.5, 0.6, 0.7, 0.85, 5.3
- What is the probability of having a coin turn up heads on three consecutive tosses?
- What percent of \$30 is \$4.50? Write an equation.
- Tim left \$3000 in an account that paid 8% simple interest annually. How much interest was earned in 2 years?
- The points (0, 3), (-3, 1), and (3, 1) are the vertices of a triangle. Find the area of the triangle.
- Use two unit multipliers to convert 4 ft² to square inches.
- If Jan walks from point A to point B to point C she walks 140 yards. How many yards would she save by taking the shortcut from point A to point C?
- Find the volume of this pyramid. The square base is 30 m by 30 m. The height is 20 m.



- Make a table that shows 3 pairs of numbers for the function $y = -x + 2$. Then graph the number pairs on a coordinate plane and draw a line through the points to show other number pairs of the function.

- Use the formula $A = \frac{1}{2}bh$ to find h when $A = 20$ and $b = 10$.

- Find $m\angle x$.



Solve and check. Show all steps.

- $1\frac{3}{5}w - 17 = 23$

- $\frac{7.5}{a} = \frac{25}{20}$

Add, subtract, multiply, or divide, as indicated:

- $1.5 \text{ km} - 860 \text{ m} = \underline{\hspace{2cm}} \text{ m}$

- $2\frac{2}{3} + \left(2\frac{1}{2} \div 6\right)$

- $\frac{(-7) - (-3) + (2)(-3)}{(-3) - (2)}$

ISBN 1-56577-074-9



9 781565 770744

