

Numbers to Thousandths and Beyond



Quick Review

► You can use a place-value chart to show decimals.

Tens	Ones	Tenths	Hundredths	Thousandths	Ten-Thousandths	Hundred-Thousandths	Millionths
2	4	3	0	4	9		
↑	↑	↑	↑	↑	↑		
20	4	0.3	0.00	0.004	0.0009		

We read this number as:
twenty-four and three thousand forty-nine ten-thousandths

We can write this number in:

- standard form: 24.3049

- expanded form:

$$2 \text{ tens} + 4 \text{ ones} + 3 \text{ tenths} + 0 \text{ hundredths} + 4 \text{ thousandths} + 9 \text{ ten-thousandths} = 20 + 4 + 0.3 + 0.004 + 0.0009$$

Try These

1. Use the place-value chart to show each number.

a) 5.3678

b) 0.002 54

c) 27.631

d) 0.000 004

	Tens	Ones	Tenths	Hundredths	Thousandths	Ten-Thousandths	Hundred-Thousandths	Millionths
a)								
b)								
c)								
d)								

2. Write 0.003 21 in words.

Estimating Products and Quotients



Quick Review

► Here are 2 strategies you can use to estimate 5.81×7 .

• **Front-end estimation**

Write 5.81 as 5.

Multiply: $5 \times 7 = 35$

This is an underestimate because 5 is less than 5.81.

• **Decimal benchmarks**

Since 5.81 is closer to 6 than to 5, write 5.81 as 6.

Multiply: $6 \times 7 = 42$

This is an overestimate because 6 is greater than 5.81.

► Here are 2 strategies you can use to estimate $284.76 \div 5$.

• **Front-end estimation**

Write 284.76 as 200.

Divide: $200 \div 5 = 40$

This is an underestimate because 200 is less than 284.76.

• **Compatible numbers**

Since 284.76 is close to 300,

divide: $300 \div 5 = 60$

This is an overestimate because 300 is greater than 284.76.

Try These

1. Estimate each product. Show your work.

a) 5.23×7 _____ b) 25.783×4 _____

c) 9.96×4 _____ d) 6.7×7 _____

2. Estimate each quotient. Show your work.

a) $15.9 \div 8$ _____ b) $18.12 \div 2$ _____

c) $42.035 \div 6$ _____ d) $159.4 \div 8$ _____

3. Estimate the area of a 3.68-cm-by-8-cm rectangle. _____

4. Estimate the side length of a square with perimeter:

a) 24.8 m _____ b) 29.0 m _____

Multiplying Decimals by a Whole Number



Quick Review

You can use what you know about multiplying whole numbers to multiply a decimal by a whole number.

Multiply: 2.936×4

- First estimate.

Since 2.936 is closer to 3 than to 2, write 2.936 as 3.

Multiply: $3 \times 4 = 12$

So, 2.936×4 is about 12.

- Record the numbers without the decimal point.

Multiply as you would with whole numbers.

- Use the estimate to place the decimal point in the product.

11.744 is close to 12, so

2.936×4 is 11.744.

$$\begin{array}{r}
 2936 \\
 \times 4 \\
 \hline
 24 \\
 120 \\
 3600 \\
 8000 \\
 \hline
 11.744
 \end{array}$$

Try These

Multiply.

1. a)
$$\begin{array}{r} 5.18 \\ \times 5 \\ \hline \end{array}$$

b)
$$\begin{array}{r} 1.734 \\ \times 8 \\ \hline \end{array}$$

c)
$$\begin{array}{r} 0.143 \\ \times 4 \\ \hline \end{array}$$

d)
$$\begin{array}{r} 9.431 \\ \times 2 \\ \hline \end{array}$$

Multiplying a Decimal Less than 1 by a Whole Number

Quick Review



When you multiply a decimal less than 1 by a whole number, the product is less than the whole number.

► To multiply 0.0295 by 7, multiply the whole numbers: 295×7

$$\begin{array}{r} 295 \\ \times 7 \\ \hline 35 \\ 630 \\ \hline 2065 \end{array}$$

Estimate to place the decimal point:

0.0295 is close to 0.03, or 3 hundredths.

3-hundredths multiplied by 7 is 21 hundredths.

21 hundredths are close to 20 hundredths, or 2 tenths.

Place the decimal point so the product is close to 2 tenths: 0.2065

So, $0.0295 \times 7 = 0.2065$

Try These

1. Multiply.

a) $0.7 \times 5 = \underline{\hspace{2cm}}$

b) $0.25 \times 3 = \underline{\hspace{2cm}}$

c) $0.12 \times 5 = \underline{\hspace{2cm}}$

2. Multiply as you would whole numbers. Estimate to place the decimal point.

a) 0.467×8

b) 0.086×9

c) 0.7634×7

3. Multiply.

a) 0.7×4 _____

b) 0.35×6 _____

0.07×4 _____

0.035×6 _____

0.007×4 _____

0.0035×6 _____

Dividing Decimals by a Whole Number



Quick Review

Here is one way to divide a decimal by a whole number.

Divide: $7.938 \div 2$

- Record the numbers without the decimal point.
Divide as you would with whole numbers.
- Estimate to place the decimal point.
 7.938 is close to 8 .
 $8 \div 2$ is 4 .

The answer must be a little less than 4 .

So, $7.938 \div 2 = 3.969$

- Check by multiplying:

$$3.969 \times 2 = 7.938$$

So, the answer is correct.

$$\begin{array}{r}
 3969 \\
 2 \overline{) 7938} \\
 \underline{- 6} \\
 19 \\
 \underline{- 18} \\
 13 \\
 \underline{- 12} \\
 18 \\
 \underline{- 18} \\
 0
 \end{array}$$

Try These

1. Divide.

a) $0.924 \div 3$

b) $5.138 \div 2$

c) $3.045 \div 5$

d) $7.896 \div 4$

Dividing a Decimal Less than 1 by a Whole Number



Quick Review

Divide: $0.086 \div 5$

► Estimate.

0.086 is close to 0.085.

0.085 is 85 thousandths.

Eighty-five thousandths divided by 5 is 17 thousandths.

So, $0.086 \div 5$ is about 0.017.

► Calculate.

$$\begin{array}{r}
 00172 \\
 5 \overline{)0.0860} \\
 \underline{-5} \\
 36 \\
 \underline{-35} \\
 10 \\
 \underline{-10} \\
 0
 \end{array}$$

So, $0.086 \div 5 = 0.0172$

Since 0.0172 is close to the estimate, 0.017, the answer is reasonable.

Try These

1. Divide.

a)

$$2 \overline{)0.0370}$$

b)

$$4 \overline{)0.36}$$

c)

$$5 \overline{)0.00740}$$

d)

$$3 \overline{)0.369}$$

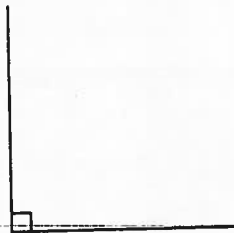
Naming Angles



Quick Review

An angle is formed when 2 lines meet.

right angle



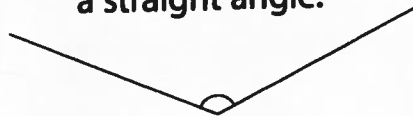
straight angle



An **acute angle** is less than a right angle.



An **obtuse angle** is greater than a right angle, but less than a straight angle.



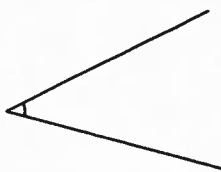
A **reflex angle** is greater than a straight angle.



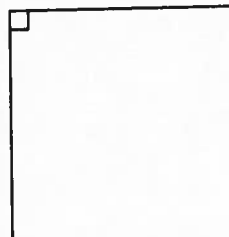
Try These

1. Name each angle as a right, acute, obtuse, straight, or reflex angle.

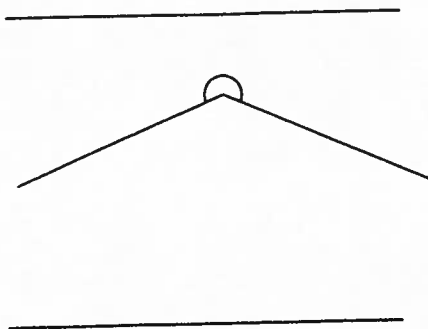
a)



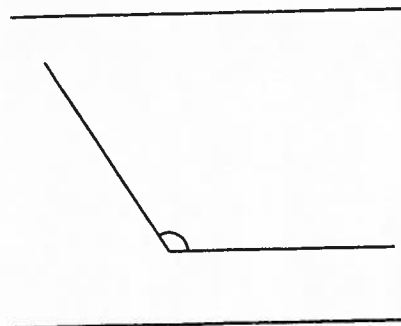
b)



c)



d)



Exploring Angles



Quick Review

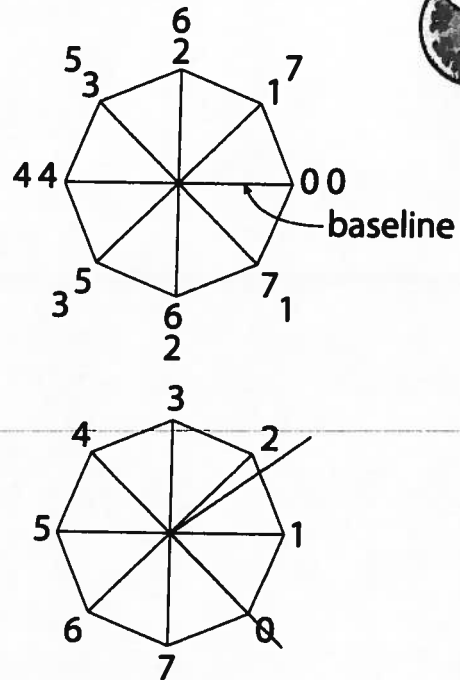
► A **protractor** measures angles.

The protractor you made looks like this:

It is divided into 8 equal units.
The units are labelled from 0 to 7 clockwise and counterclockwise.

To measure an angle, count how many units fit the angle.

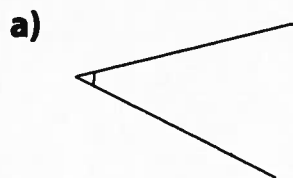
This angle is about 2 units.

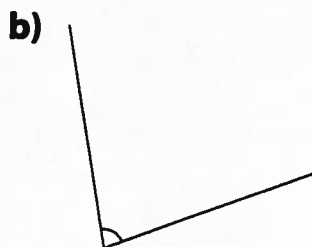


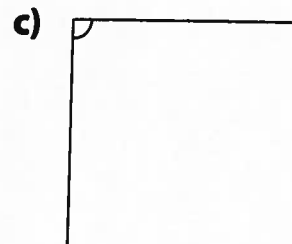
Try These

Use an 8-unit protractor.

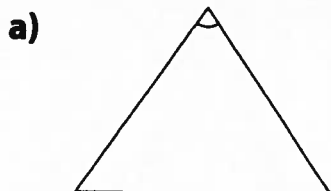
1. Use your protractor to measure each angle.

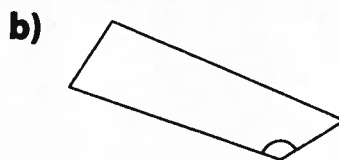


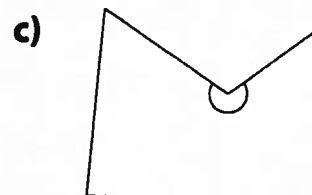




2. Use your protractor to measure the marked angle in each polygon below.





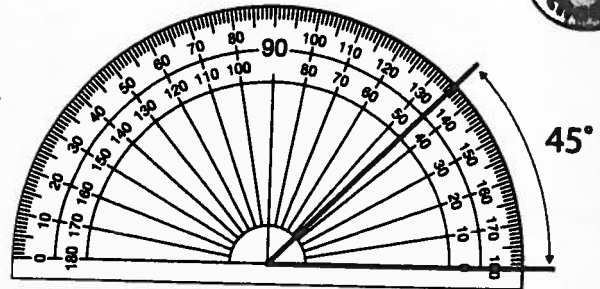


Measuring Angles

Quick Review

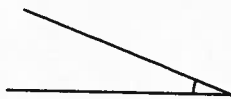


- ▶ A standard protractor shows angle measures from 0° to 180° , both clockwise and counterclockwise. The measure of this angle is 45° .



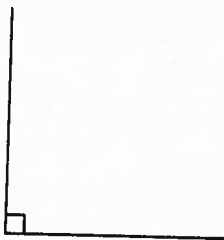
- ▶ Angles are named according to their measures in degrees.

Acute Angle



less than 90°

Right Angle



90°

Obtuse Angle



between 90° and 180°

Straight Angle



180°

Reflex Angle



between 180° and 360°

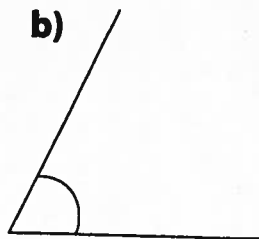
Try These

1. Use a protractor to measure each angle. Record the measurements.

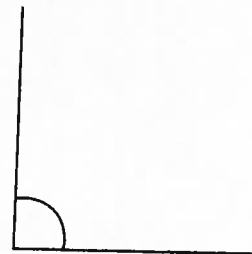
a)



b)



c)



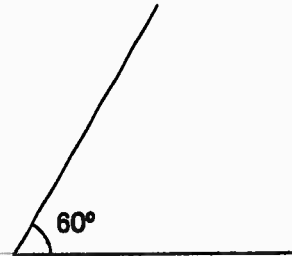
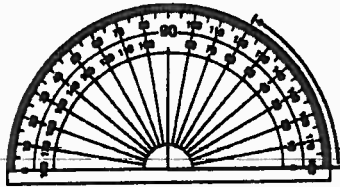
Drawing Angles



Quick Review

- We use a ruler and a protractor to construct an angle with a given measure.

Here is how to construct a 60° angle.



Draw one arm of the angle.

Place the centre of the protractor at one end of the arm so that the base line of the protractor lies along the arm. Find 60° and make a mark.

Remove the protractor.
Draw the arm.
Label the angle.

Try These

- Use a ruler and protractor.
Draw an obtuse angle with each measure.
 - 135°
 - 100°
 - 167°
- Use only a ruler. Estimate to draw each angle.
 - 75°
 - 145°
 - 50°

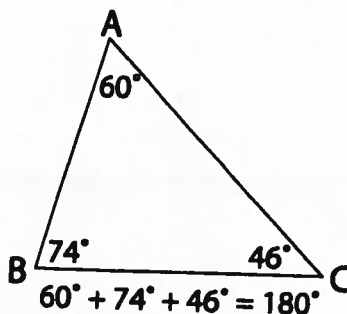
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Investigating Angles in a Triangle

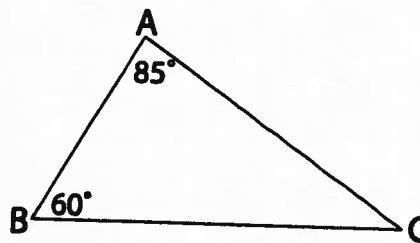
Quick Review



- The sum of the interior angles in a triangle is 180° .

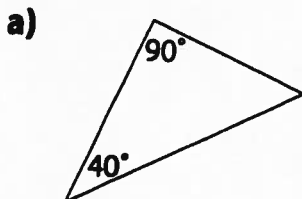


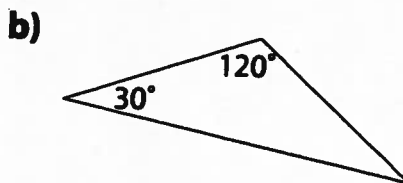
- To find the measure of $\angle C$ in triangle ABC:
 $\angle A + \angle B + \angle C = 180^\circ$
 Since $\angle A = 85^\circ$ and $\angle B = 60^\circ$,
 $85^\circ + 60^\circ + \angle C = 180^\circ$
 $145^\circ + \angle C = 180^\circ$
 $180^\circ - 145^\circ = 35^\circ$
 So, the measure of $\angle C$ is 35° .

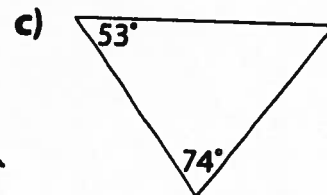


Try These

1. Determine the measure of the third angle without measuring.







2. Two angles of a triangle are given. Find the measure of the third angle. Show your work.

a) $70^\circ, 60^\circ$ _____

b) $25^\circ, 90^\circ$ _____

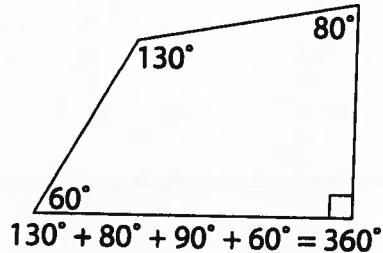
c) $110^\circ, 40^\circ$ _____

Investigating Angles in a Quadrilateral



Quick Review

- ▶ The sum of the interior angles in a quadrilateral is 360° .



- ▶ To find the measure of $\angle G$ in quadrilateral DEFG:

$$\angle D + \angle E + \angle F + \angle G = 360^\circ$$

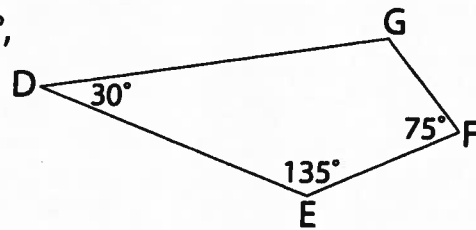
Since $\angle D = 30^\circ$, $\angle E = 135^\circ$, and $\angle F = 75^\circ$,

$$30^\circ + 135^\circ + 75^\circ + \angle G = 360^\circ$$

$$240^\circ + \angle G = 360^\circ$$

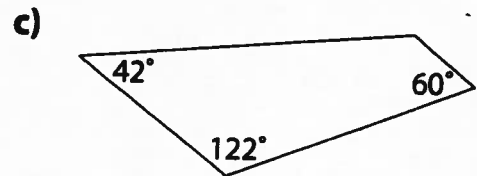
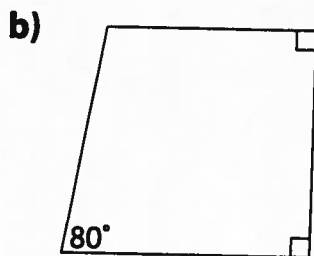
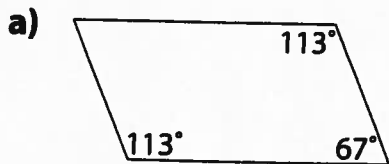
$$360^\circ - 240^\circ = 120^\circ$$

So, the measure of $\angle G$ is 120° .



Try These

- Determine the measure of the fourth angle without measuring.



- Three angles of a quadrilateral are given. Find the measure of the fourth angle.

a) $25^\circ, 70^\circ, 110^\circ$ _____

b) $42^\circ, 38^\circ, 100^\circ$ _____

c) $90^\circ, 90^\circ, 41^\circ$ _____

d) $115^\circ, 95^\circ, 63^\circ$ _____

e) $107^\circ, 36^\circ, 49^\circ$ _____

f) $116^\circ, 72^\circ, 49^\circ$ _____