

**Warm-Up**

**1** Write the missing numbers to make the equations correct:

$12 \times \underline{\quad} = \underline{\quad} \times 10$	$\underline{\quad} \times 15 = \underline{\quad} \times 10$
$\underline{\quad} \times 8 = \underline{\quad} \times 12$	$\underline{\quad} \times 6 = \underline{\quad} \times 3$
$\underline{\quad} \times 8 = \underline{\quad} \times 10$	$\underline{\quad} \times 2 = \underline{\quad} \times 4 = \underline{\quad} \times 8$

**2** Solve equations and check your answer:

a) $14 + x = 26$	b) $x - 18 = 33$	c) $89 - a = 71$
_____	_____	_____
_____	_____	_____
_____	_____	_____

**3** Compare expressions (<, >, =):

$7 \times 5 \dots 6 \times 8$	$12 + 12 + 12 \dots 12 \times 4$
$3 \times 9 \dots 5 \times 5$	$4 \times 6 \dots 3 \times 8$
$5 \times 9 \dots 5 \times 5 + 5$	$10 \times 3 \dots 5 \times 5 + 5$
$3 \times 9 \dots 4 \times 7 + 2$	$15 + 15 + 15 \dots 10 \times 5 - 5$

**4** Answer the questions (mental math):

- a) How many threes should be subtracted from 15 so the result is 0? \_\_\_\_\_
- b) How many fours should be subtracted from 24 so the result is 0? \_\_\_\_\_
- c) Six tens are subtracted from the number and the result is 2. What is the number? \_\_\_\_\_
- d) Eight threes are subtracted from the number and the result is 1. What is the number? \_\_\_\_\_

**5** Evaluate an expression  $9 \times a + 3$  for each value of  $a$ :

$a = 9$	$a = 5$	$a = 20$
_____	_____	_____

**6** Simplify each expression below:

$a + 11 + 14 =$	$18 + b + 20 =$	$c + 12 + c =$
$p + 10 - 50 =$	$18 + l - l =$	$m + m + k + k =$

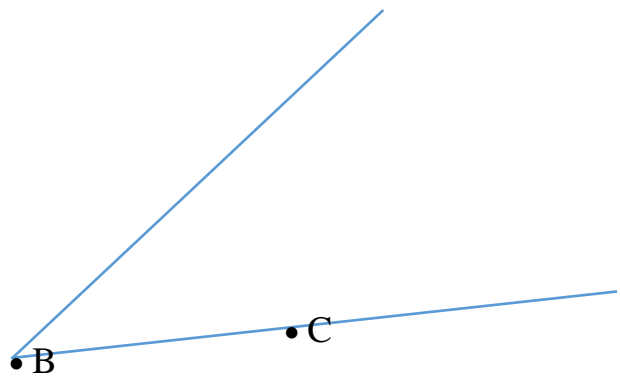
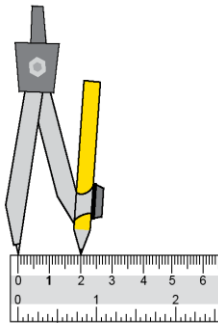
**New Material I**

**Using a compass**

A compass is a handy drawing tool to have around. Use it to draw circles, make equal size line segments or find the midpoint of a line.

**8.**

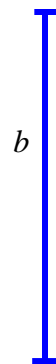
Use a compass to find a point A on the other side of the angle so that point A will be on the same distance from the vertex of the angle – B, as point C is.



**9.**

Use a compass and a straightedge (ruler) to construct a line segment which is

a) The sum of the segments *a* and *b*.



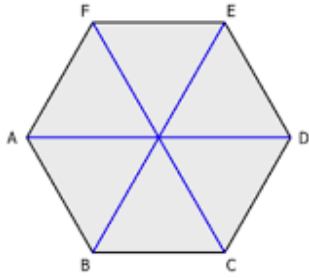
b) The difference of those segments.



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10

Let's learn how to build a symmetrical hexagon using a compass and a straight edge only!



- a) Use a compass to draw a circle centered at a given point **A** and passing through another point **B** (choose your own compass opening).
- b) Place your compass with the same radius setting at the point **B** and make a mark on a circle on either side of point **B**. Mark this point with a letter **C**
- c) Place your compass with the same radius setting at the point **C** and make a mark on a circle going in the same direction as you did in step b). Mark this point with a letter **D**.
- d) Repeat step c) three more times or until you will come back to a point **B**.
- e) Take a straight edge and connect each point with two neighboring points.
- f) Using a straight edge connect each point with a center of your initial circle – point **A**.

● A

**Questions:** 1. If we set the distance between point A (center of the circle) and point B to be 1 unit, what is the distance AC? \_\_\_\_\_AD? \_\_\_\_\_.

2. What can you tell about the 6 angles, between segments connecting center of the circle A with points B, C, D, E, F, G –  $\angle BAC$ ,  $\angle CAD$ ,  $\angle DAE$ ,  $\angle EAF$ ,  $\angle FAG$  and  $\angle GAB$ ?

3. Can you tell the measure of each angle in degrees, if we know that the full angle is  $360^\circ$ ?

**New Material II**

**Multiplying Bigger Numbers:**

When multiplying by two-digit number,  
We can use a “partial products” method.

CALCULATE:  $179 \times 64$

Here is the answer using the partial products algorithm:

Here is a rectangle with side lengths  $100 + 70 + 9$  and  $60 + 4$  that shows all the partial products as the area of part of the rectangle:

	100	70	9
60	$60 \times 100 =$ 6,000	$60 \times 70 =$ 4,200	$60 \times 9 =$ 540
4	$4 \times 100 =$ 400	$4 \times 70 =$ 280	$4 \times 9 =$ 36

$$\begin{array}{r}
 179 \\
 \times 64 \\
 \hline
 9 \times 4 = 36 \\
 70 \times 4 = 280 \\
 100 \times 4 = 400 \\
 9 \times 60 = 540 \\
 70 \times 60 = 4200 \\
 100 \times 60 = 6000 \\
 \hline
 11,456
 \end{array}$$

$$\begin{array}{r}
 6,000 \\
 4,200 \\
 540 \\
 400 \\
 280 \\
 + 36 \\
 \hline
 11,456
 \end{array}$$

Multiply:

11

$321 \times 22 =$

$482 \times 36 =$

$503 \times 84 =$

