Math 3 Classwork 8

Warm-Up

1

Arrange the following expressions in decreasing order (without calculating their values):

(75 -19) (65 - 49) (65 - 29) (75 - 29) (65 - 39)

____

2

Write expression for each problem and find the values where possible:

a) Nick runs 2 miles every weekday and 5 miles on each weekend day. How many miles does Nick run in one week? ________________________________

b) Bananas come in 7kg boxes and apples come in 5kg boxes.

How many bananas will be in *x* boxes? _______________________

How many apples will be in *y* boxes? ________________________

3

Write the extended answers: (*Example: 2l* × 5 = *10 liters)*

1kg × 4 = _____________ 1m × 7 = _____________

1 egg × 4 = ____________ 3l × 3 = _____________

Homework Review

1. Compare, using <, > or =:

$245 - a$ ___ $205 - a$ $m - 73$ ___ $m - 37$ $c + d$ ___ $d + c$

$b - 207$ ___ $b - 72$ $210 + n$ ___ $n + 211$ $40 - k$ ___ $140 - k$

2. Collect the like terms to simplify:

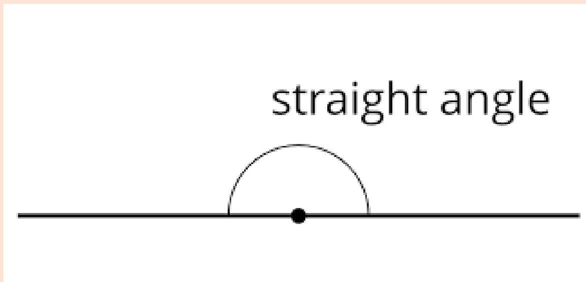
12 + 6 – b – a + 32 + 2a + 2b – a – b = _______________

25 + a + 5a – 10 =______________

3 + 237 – a + 4 – a + 7a = ________________

New Material I

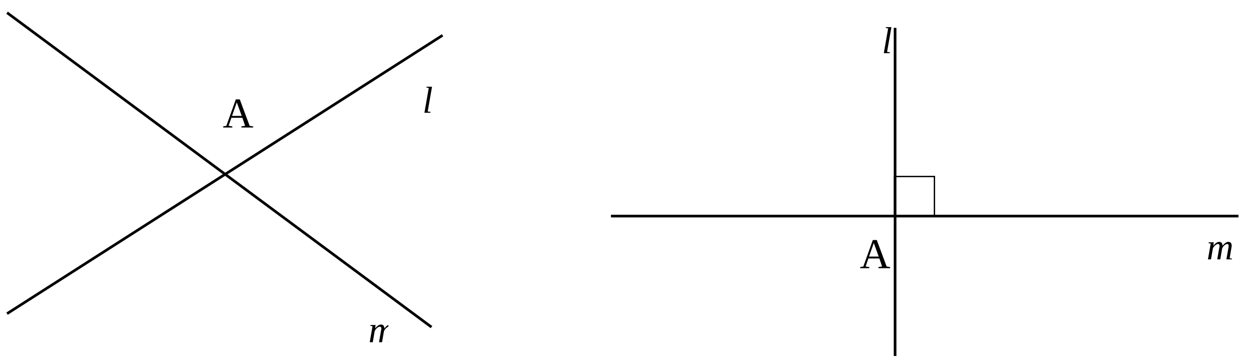
One line divides a plane into two parts - **two straight angles.**



In a straight angle, the angle rays have the opposite directions.

Two lines divide a plane into four parts. **Four angles**.

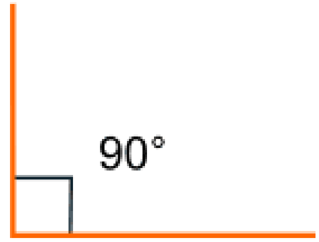
If two straight lines crossing one another make four equal angles, then each of those angles is called a **right angle**; and straight lines are called **perpendicular lines**.



4

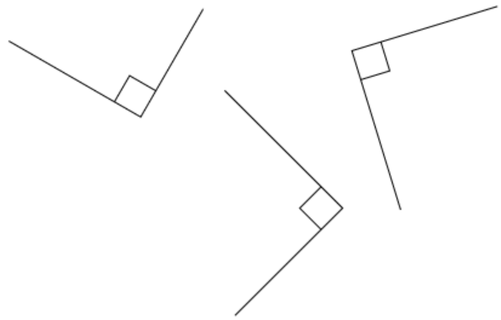
Making a Right Angle Template.

Fold a sheet of paper in half and then in half again. Trace the creases with a pencil.
Unfold the paper. How many straight lines did you get?
How many angles do these lines form?

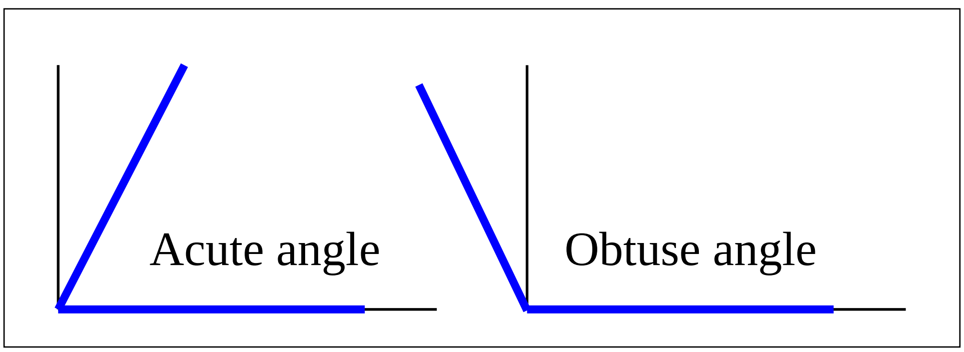


Note the special symbol in the angle. If we see this box, it is a right angle.
The 90° is rarely written in. We will talk about measuring angles later.

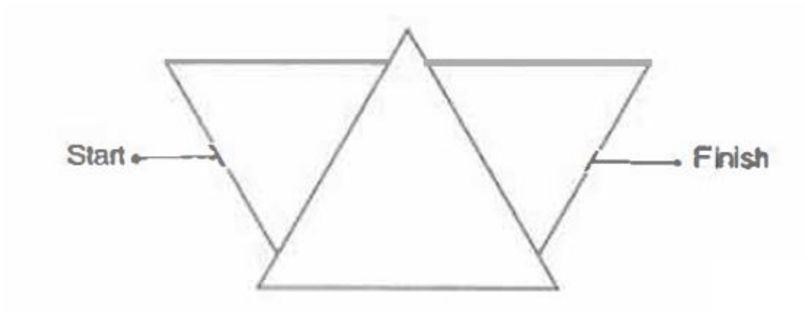
All the angles below are right angles. Use your right angle template to check it.



Types of angles:
A **straight angle**
A **right angle**
An **acute angle** is an angle that is smaller than a right angle.
An **obtuse angle** is an angle that is larger than a right angle.



5 Complete the angle maze below by tracing a path from start to finish that has only acute angles.



6. Letters as geometric figures. How many angles are in each of these letters? Are they acute, obtuse or right angles?

A **T** **Y**

_______________ _______________ _______________

REVIEW

7

Simplify expressions (cancel equal numbers with the opposite signs) and calculate:

a) 534 – 21 + 642 – 37 + 21 + 1 – 534 + 37 – 642 =

b) 842 – 621 + 318 – 1 + 7 + 621 – 842 – 318 =

c) 1257 – x – 219 + 328 – 1 + 9 + x – 1257 + 219 – 328 =

8

Calculate (write in the vertical form):

a) 575 – 289 =

b) 271 – 158

c) 5,467 + 284 =

Multiplication Table

Like everyone in the world - you’ll have to memorize it!

MULTIPLICATION TABLE

	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

9 Perform the following actions and write their results:

$1 \times 2 =$ ___________

$1 \times 3 =$ ___________

$1 \times 6 =$ ___________

Conclusion: $1 \times \boldsymbol{a} =$ __________

10 Perform the following actions and write their results:

$0 \times 2 =$ ___________

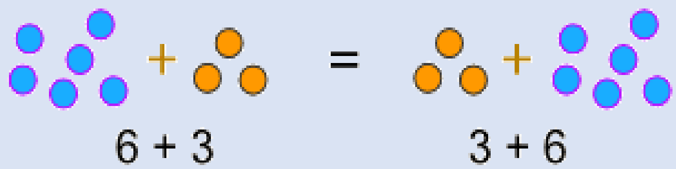
$0 \times 3 =$ ___________

$0 \times 6 =$ ___________

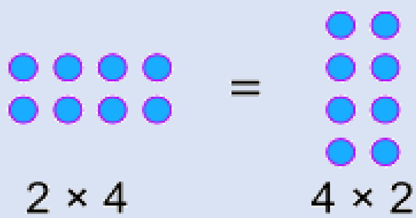
Conclusion: $0 \times \boldsymbol{a} =$ ___________

The **Commutative property** of multiplication (or addition) says that when two numbers are multiplied (or added) together,
the product is the same regardless of the order of factors.

When we **add**: **a + b = b + a**



When we **multiply**: **a × b = b × a**



11 a) Use the commutative property of multiplication to evaluate the expressions:

Example: $3 \times 1 = 1 \times 3 = 3$

$5 \times 1 = 1 \times 5 =$ ______

$7 \times 1 = \quad \times \quad =$ ______

$9 \times 1 = \quad \times \quad =$ ______

Conclusion: $\boldsymbol{a} \times 1 =$ _________

b) Use the commutative property of multiplication to evaluate the expressions:

$3 \times 0 = 0 \times 3 =$ ______

$5 \times 0 = 0 \times 5 =$ ______

$7 \times 0 =$ ___ $\times$ ___ $=$ ______

Conclusion: $\boldsymbol{a} \times 0 =$ ___________

12. Solve the equations:

$9 \times \boldsymbol{x} = 9$	$\boldsymbol{p} \times 7 = 7$	$22 \times \boldsymbol{r} = 0$	$\boldsymbol{q} \times 17 = 0$
$\boldsymbol{x} =$ ____	$\boldsymbol{p} =$ ____	$\boldsymbol{r} =$ ____	$\boldsymbol{q} =$ ____

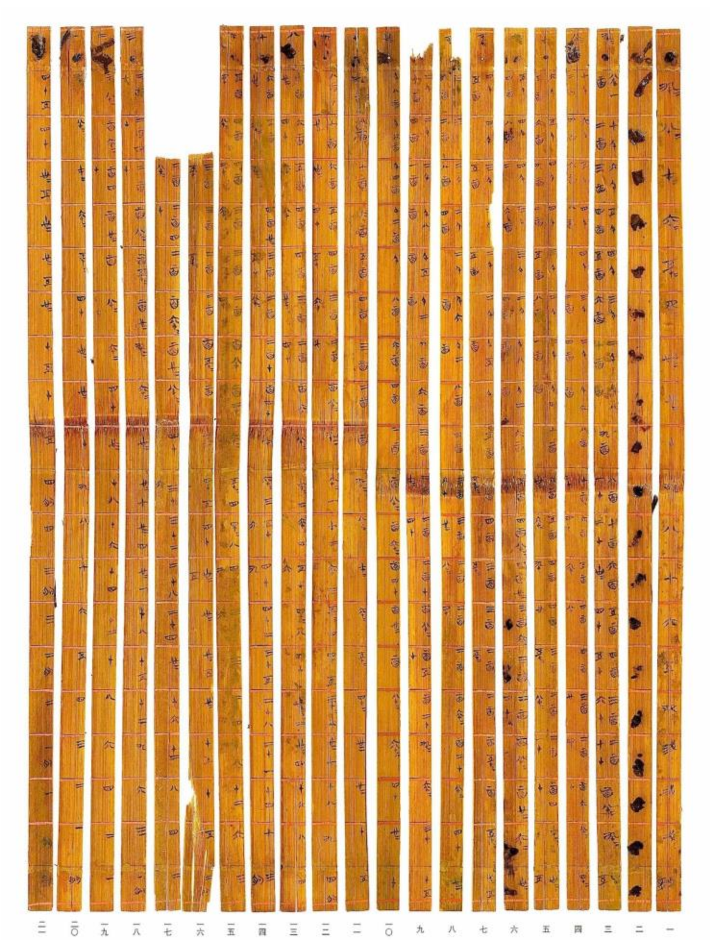
Did you Know …?

In mathematics, a **multiplication table** (sometimes, less formally, a **times table**) is a table used to define results of multiplication operations.

The multiplication table is traditionally taught in elementary schools around the world, as it lays the foundation for arithmetic operations with base-ten numbers.

Many educators believe it is necessary to memorize the table up to 9 × 9.

Babylonians invented multiplication about 4000 years ago. They did their mathematics on clay tablets, some of which have survived until today. As their civilization grew, they needed to do more and more sophisticated mathematics to help them build and trade. In order to speed up calculations, merchants would carry around tablets with these multiplication tables, much as modern-day engineers might carry calculators in their pockets.



The multiplication table is sometimes attributed to the ancient Greek mathematician Pythagoras (570-495 BC). It is also called the Table of Pythagoras in many languages (for example French, Italian and at one point even Russian), sometimes in English.

In 2010, Tsinghua University in Beijing received a donation of nearly 2,500 bamboo strips. Muddy, smelly and teeming with mold, the strips probably originated from the illegal excavation of a tomb, and the donor had purchased them at a Hong Kong market. These strips were 4,300 years old.

Out of total 76 strips found, "21 bamboo strips stand out from the rest as they contain only numbers, written in the style of ancient Chinese", says Feng Lisheng, a historian of mathematics at Tsinghua.
Those 21 strips turned out to be a multiplication table!