

PERFECT

Maths 4



Table of Contents

Chapter 1 Geometry

Chapter 1 Pretest	4-5
Lessons	6-23
Chapter 1 Posttest	24-25

Chapter 2 Perimeter, Area, and Volume

Chapter 2 Pretest	26-27
Lessons	28-45
Chapter 2 Posttest	46-47

Chapter 3 Preparing for Algebra

Chapter 3 Pretest	48-49
Lessons	50-67
Chapter 3 Posttest	68-69

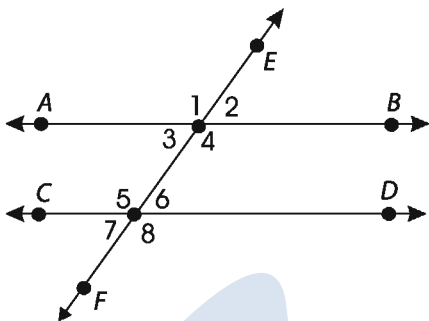
Final Test

.....	70-74
Grade 10 Answers	75-93
Scoring Record for Posttests, and Final Test	94

AL-RROWAD FOR PUBLISHING & DISTRIBUTION
BOOK MAKERS

Geometry

Answer each question using letters to name each line or angle.

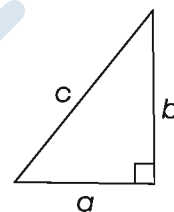


1. What is the name of the transversal? _____
2. Which angles are acute? _____
3. Which angles are obtuse? _____
4. Which pairs of angles are vertical angles? _____
5. Which pairs of angles are alternate exterior angles?

6. Which pairs of angles are alternate interior angles? _____

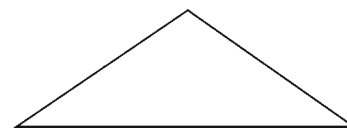
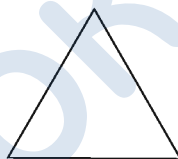
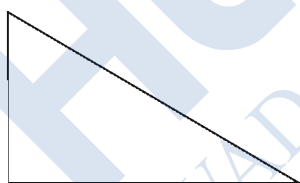
Use the Pythagorean Theorem to find the length of the missing side of each right triangle.

7. If $a = 8$ and $b = 15$, $c = \sqrt{\quad}$ or _____
8. If $b = 7$ and $c = 13$, $a = \sqrt{\quad}$ or about _____
9. If $a = 9$ and $c = 20$, $b = \sqrt{\quad}$ or about _____



Label each triangle acute, right, or obtuse and equilateral, isosceles, or scalene.

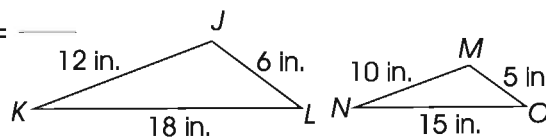
10.



_____ , _____ , _____

Use ratios to determine whether the pairs of triangles are similar.

11. $\frac{JL}{MO} = \frac{JK}{MN} = \frac{KL}{NO} = \frac{\quad}{\quad} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$



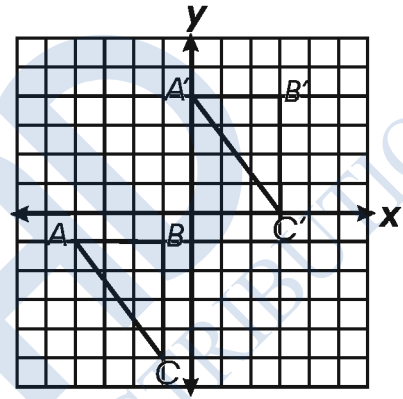
Are the two triangles similar? _____

12. What are the coordinates of the preimage?

A (_____), B (_____), C (_____)

13. What are the coordinates of the image?

A' (_____), B' (_____), C' (_____)



14. What transformation was performed on the figure?

Use your knowledge of similar triangles and the Pythagorean Theorem to solve the following.

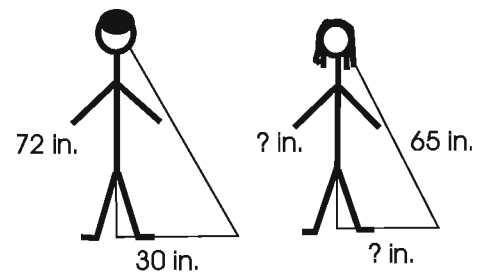
15. $D'F' = \underline{\hspace{2cm}} \text{ m}$ $GI = \underline{\hspace{2cm}} \text{ m}$
 $G'H' = \underline{\hspace{2cm}} \text{ m}$
 $H'I' = \underline{\hspace{2cm}} \text{ m}$

Solve each problem

16. Jason and his sister Joanna cast similar shadows as shown. How tall is Joanna? How long is her shadow on the ground?

Joanna is _____ inches tall.

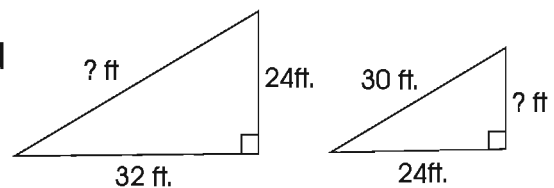
Her shadow is _____ inches long.



17. Two ships have similar on-ramps as shown. How long is the larger ramp? How high off the ground is the smaller ramp?

The larger ramp is _____ feet long.

The smaller ramp is _____ feet off the ground.

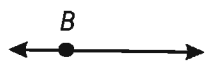


Points and Lines

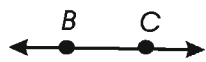
A **point** is a single location in space. It has no dimensions.

A **line** is the set of all points extending straight in both directions.

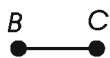
A **line segment** is the part of a line between 2 points on the line.



You can name a **point** with a letter: point B .



You can name a **line** by naming any 2 points on the line: \overleftrightarrow{BC} or \overleftrightarrow{CB} .



You can name a **line segment** by naming its end points: \overline{BC} or \overline{CB} .



At left is line segment \overline{DE} or \overline{ED} .

Write it as \overline{DE} or \overline{ED} .

To refer to one point, just write D or E .



At left is line \overleftrightarrow{GH} or \overleftrightarrow{HG} . Write it as \overleftrightarrow{GH} or \overleftrightarrow{HG} .

Tell what each symbol names. Then, draw it.

1. \overline{PQ} means _____

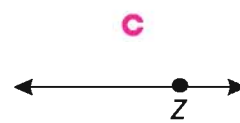
2. \overleftrightarrow{ST} means _____

3. P means _____

Name each figure using letters. Name each figure in more than one way, if you can.

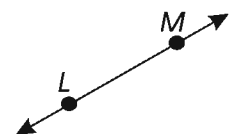










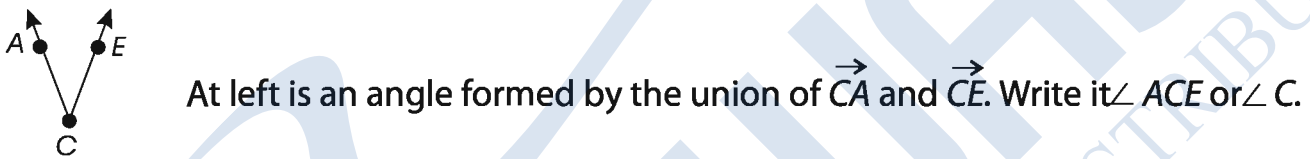
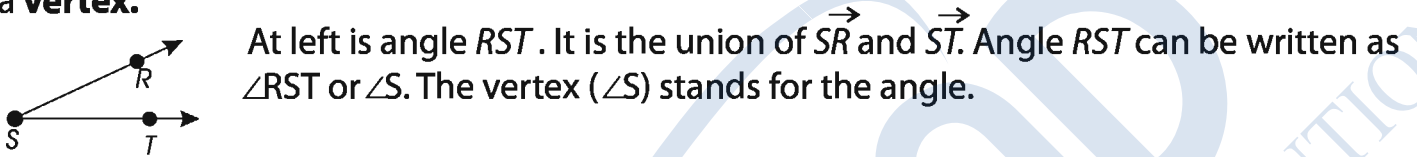


RAYS AND Angles

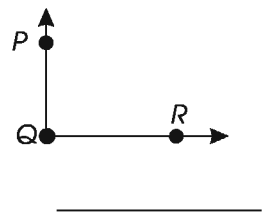
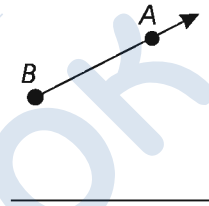
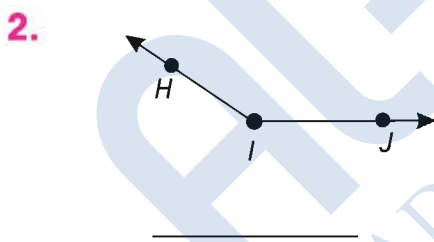
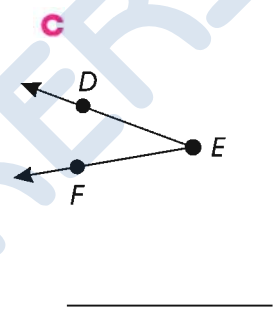
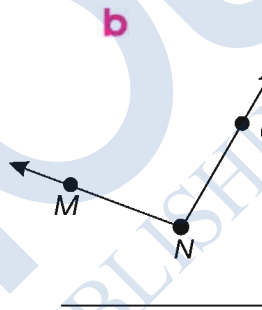
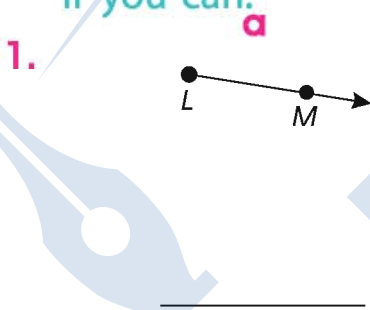
A **ray** is part of a line. It has one endpoint, but extends infinitely in one direction.



An **angle** is the union of two rays which share a common endpoint. The endpoint is called a **vertex**.



Name each figure using letters. Name each figure in more than one way, if you can.



Tell what each symbol names. Then, draw it.

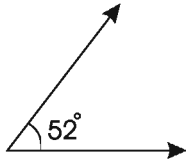
3. $\angle BCD$ means _____

4. \vec{RS} means _____

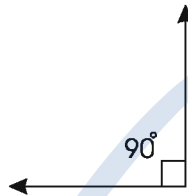
5. $\angle Q$ means _____

Measuring Angles

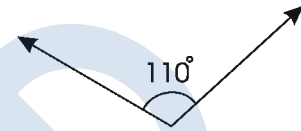
An **acute** angle measures less than 90° .



A **right** angle measures exactly 90° .



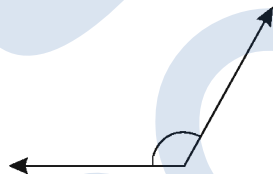
An **obtuse** angle measures more than 90° and less than 180° .



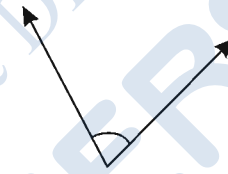
Measure each angle with a protractor. Write the angle measure, then write acute, right, or obtuse.

1.

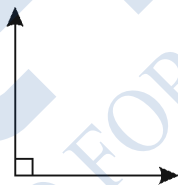
a

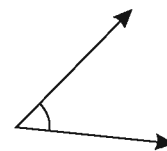


b

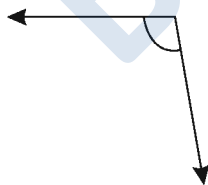


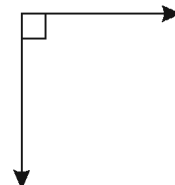
2.





3.





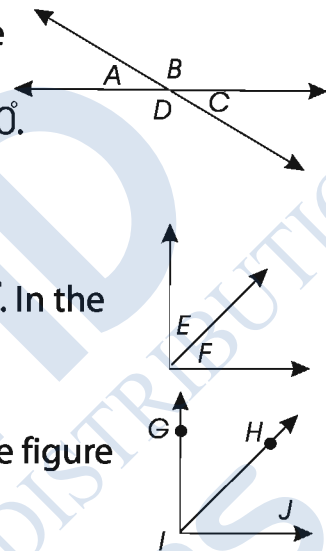
Vertical, Supplementary, and Complimentary Angles

Vertical angles are the 2 angles opposite each other where 2 lines meet. In the figure to the right, $\angle A$ and $\angle C$ are vertical angles. $\angle B$ and $\angle D$ are also vertical angles. Vertical angles are **congruent**. They have the same measure.

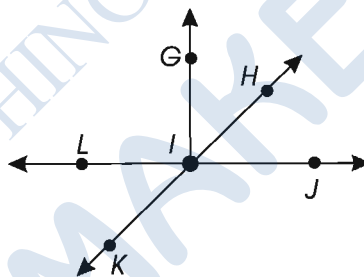
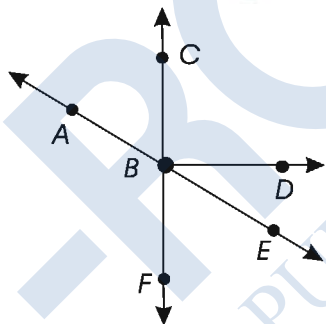
Supplementary angles are 2 angles whose measures add up to 180° . In the figure to the right, $\angle A$ and $\angle B$ are supplementary. $\angle B$ and $\angle C$ are also supplementary.

Complementary angles are 2 angles whose measures add up to 90° . In the figure to the right, $\angle E$ and $\angle F$ are complementary.

An **angle bisector** is a ray that divides an angle **exactly** in half. In the figure to the right, \overrightarrow{IH} is an angle bisector of $\angle GIJ$.



Use 3 letters to name each angle in the figures below.



1. Which pairs of angles are complementary?

\angle / \angle , \angle / \angle

2. Which pairs of angles are supplementary?

\angle / \angle , \angle / \angle , \angle / \angle , \angle / \angle , \angle / \angle

\angle / \angle , \angle / \angle , \angle / \angle , \angle / \angle , \angle / \angle

3. Which pairs of angles are vertical angles?

\angle / \angle , \angle / \angle , \angle / \angle , \angle / \angle

4. Name a point on an angle bisector. _____

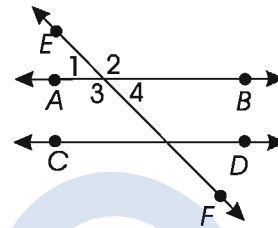
Transversals

Parallel lines are two lines that will **never** meet.

In the figure, \overleftrightarrow{AB} and \overleftrightarrow{CD} are parallel (||) lines.

A **transversal** is a line that intersects 2 parallel lines.

\overleftrightarrow{EF} is a transversal of \overleftrightarrow{AB} and \overleftrightarrow{CD} .

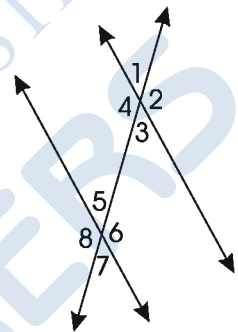


Adjacent angles are any 2 angles that are next to one another. In the figure, $\angle 1$ and $\angle 2$ are adjacent. $\angle 2$ and $\angle 4$ are also adjacent. Adjacent angles share a ray. They also form supplementary angles (180°).

1. Name the pairs of adjacent angles in the figure.

\angle _____ / \angle _____ , \angle _____ / \angle _____ , \angle _____ / \angle _____ , \angle _____ / \angle _____
 \angle _____ / \angle _____ , \angle _____ / \angle _____ , \angle _____ / \angle _____ , \angle _____ / \angle _____

Alternate interior angles are those that are inside the parallel lines and opposite one another. $\angle 3$ and $\angle 6$ are alternate interior angles. Alternate interior angles are congruent.



2. Name another pair of alternate interior angles in the figure. \angle _____ / \angle _____

Alternate exterior angles are those that are outside the parallel lines and opposite one another. $\angle 1$ and $\angle 8$ are alternate exterior angles. Alternate exterior angles are also congruent.

3. Name another pair of alternate exterior angles in the figure. \angle _____ / \angle _____

Look at the figure. List the following pairs of angles.

4. Adjacent: \angle _____ / \angle _____ , \angle _____ / \angle _____ , \angle _____ / \angle _____ , \angle _____ / \angle _____
 \angle _____ / \angle _____ , \angle _____ / \angle _____ , \angle _____ / \angle _____ , \angle _____ / \angle _____

5. Alternate interior: \angle _____ / \angle _____ , \angle _____ / \angle _____

6. Alternate exterior: \angle _____ / \angle _____ , \angle _____ / \angle _____

7. Vertical: \angle _____ / \angle _____ , \angle _____ / \angle _____
 \angle _____ / \angle _____ , \angle _____ / \angle _____

