Name: _____ Group: _____ Date: _____

THE TECHNOLOGICAL WORLD . . . . . .

Graphical language

STUDENT BOOK | Ch. 11, pp. 336–342

Basic lines, geometric lines, sketches

1. In technology, the two most widely used types of technical drawings are:

a) sketch and oblique projection.
b) diagram and production drawing.
c) sketch and diagram.
d) geometric line and diagram.
e) perspective drawing and diagram.

2. Match the following terms to their corresponding description.

Sketch	Production drawing	Technical drawing
Basic line	Diagram	Geometric line

a) I am a freehand drawing that follows technical drawing standards.

_____

b) I am a shape made with drawing instruments and used in complex drawings.

_____

c) I am a line with an appearance and a significance governed by international standards.

_____

d) I am a drawing type that most accurately represents the parts of an object.

_____

e) I provide details of an object or system.

_____

f) I am a simplified type of technical drawing.

_____

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Basic lines, geometric lines, sketches (*continued*)

3. Identify the type of line according to its usage.

Line type	Usage
a) _____	**1.** Establishes the extent of a dimension.
b) _____	**2.** Indicates the dimensions of an object.
c) _____	**3.** Indicates a surface that has been theoretically cut.
d) _____	**4.** Indicates the centre of a circle.
e) _____	**5.** Indicates the area on a drawing referred to by a note.

4. True or false?

a) The two types of basic lines drawn with a thick line are the object line and centre cut line. _____

b) Most basic lines are drawn with a thin line. _____

c) A medium line is used to draw hidden object lines. _____

d) Only one type of basic line is made with small lines. _____

e) Two types of basic lines contain arrowheads. _____

f) The dimension line is placed between two leader lines. _____

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GRAPHICAL LANGUAGE (*continued*)

STUDENT BOOK	Ch. 11, pp. 343–351

Orthogonal projections (multiview, isometric), forms of representation (perspective drawing, oblique projection), types of production drawings

1. True or false?

a) The representation of an object on a piece of paper is achieved by projection drawing. _____

b) A projection is used to represent a three-dimensional object on a two-dimensional surface. _____

c) A face represents only two dimensions of an object. _____

d) An edge indicates the limits of a face and is one-dimensional. _____

e) A perspective drawing represents two dimensions of an object. _____

2. Answer "yes" or "no." If the answer is "no," explain why.

a) Can the same object be represented using several types of projections?

_____

_____

_____

b) Do small lines on a multiview projection represent the visible lines of an object?

_____

_____

_____

c) Is a multiview projection generally used for detailed drawings?

_____

_____

_____

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Orthogonal projections (multiview, isometric), forms of representation (perspective drawing, oblique projection), types of production drawings (*continued*)

3. Objects are represented using three main types of projection.

A. Multiview	B. Isometric	C. Oblique

Indicate the type or types of projection described in each statement below.

a) One of the faces of the object is parallel to the sheet of paper. _____

b) Each object can be seen from six different angles. _____

c) These projections are part of orthogonal projections. _____

d) Objects are represented in three dimensions in the same view. _____

e) Projection that represents objects in two dimensions. _____

f) Visual rays leaving the object are oblique according to the projection plan. _____

4. What are we?

a) We are often used together to provide a better display of an object.

_____

b) We are three views positioned in an L in multiview projections.

_____

c) I am a projection where all angles between the axes are 120 degrees.

_____

5. Match each of the following examples to the corresponding type of drawing.

Example	Drawing
a) Drawing of the sole of a running shoe showing a front view and a top view	1. Assembly drawing
b) Drawing of a lamp with shapes, parts and locations shown in isometric and multiview projections	2. Exploded assembly drawing
c) Drawing of an armoire with all parts shown separately in isometric projection	
d) Drawing of a chair specifying all details necessary to manufacture the chair back	3. Detail drawing

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GRAPHICAL LANGUAGE (*continued*)

STUDENT BOOK	Ch. 11, pp. 351–355

Scales, dimensioning, tolerance (AST), cross sections, sections (AST)

1. In a scale with a ratio of 1:300 on a technical drawing, what is the meaning of:

a) the factor on the left?

_____

b) the factor on the right?

_____

2. Below are the different types of scales used in technical drawings.

A. Scale reduction	B. Actual size	C. Scale enlargement

a) Identify the type of scale for each ratio.

1. 1:100 _____
2. 1:5 _____
3. 50:1 _____
4. 1:1 _____
5. 25:1 _____

b) For each example in question a), indicate the real size of a 20 mm line in a drawing made with the ratio.

1. _____
2. _____
3. _____
4. _____
5. _____

3. What is the ratio in each example below?

a) A hair clip five times larger in the drawing than in reality _____

b) The plan for a new model of sports car with parts drawn 80 times smaller than in reality _____

c) A remote control drawn according to its actual dimensions _____

d) An electrical component enlarged 25 times in the drawing _____

4. What is the ratio in each example below?

a) R b)  c) ∅	1. Diameter of a hole or a circle 2. Radius or arc of a circle 3. Value of an angle

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Scales, dimensioning, tolerance (AST), cross sections, sections (AST) (*continued*)

5. True or false?

a) Dimensioning is the indication of actual dimensions and position of elements of an object. _____

b) The two base lines used in dimensioning a drawing are dimension lines and construction lines. _____

c) Tolerance is always indicated with a dimension. _____

d) Tolerance is the maximum acceptable variation between a specified measurement and an actual measurement. _____

e) In industry, the greater the tolerance, the higher is the cost of production. _____

6. Place a checkmark beside the correct way to indicate dimensioning, including tolerance, for a diameter of between 39 mm and 45 mm.

a) R 780 ± 28 ☐

b) 150 ☐

c) ∅ 42 ± 3 ☐

d) 45° ± 5 ☐

e) ∅ 45 ☐

7. Use the following words to complete the sentences below. Terms may be used more than once.

cross section	hatching	superimposed	engineering
multiview	section	outside	visible
hidden	inside	surface	

a) A _____ reveals the _____ of an object, exposing its _____ details to view. Cross sections are used in _____ drawings when the illustrated object contains many superimposed details.

b) _____ projection is used to represent a view in _____. With a view in a _____, the sectioned surfaces are indicated with _____.

c) To better represent an object, a _____ can also be reproduced.It represents a _____ located in the cross-section view. In an engineering drawing, sections are located _____ or _____ of the object represented.

d) The basic lines used to represent sections are _____ lines and _____.

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GRAPHICAL LANGUAGE (*continued*)

STUDENT BOOK	Ch. 11, pp. 355–359

Standards and representations diagrams, symbols

1. Circle the definition that best describes a diagram.

a) Technical drawing with more precision than an engineering drawing
b) Drawing made with drafting software
c) A simplified representation of an object, part of an object or a system
d) Drawing used to represent a technical object

2. For the statements below:

a) Circle each one that follows rules for drawing a diagram.
b) Identify the element of the rules referred to by each statement.

	Diagram element
1. Parts that touch one another must be in different colours.	_____
2. The proportions of parts must be respected.	_____
3. Lines must be drawn using a computer.	_____
4. The object can be represented in different perspectives.	_____
5. Diagrams must always include dimensions as in engineering drawings.	_____

3. Complete the sentences below with the following words. A word may be used more than once.

translation compression symbols rotation shearing tension

In a diagram, _____, _____ and _____ are examples of constraints that can be represented by _____. _____ are also used to represent movement such as _____ and _____ and helical movement.

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Standards and representations: diagrams, symbols (*continued*)

4. True or false?

a) Compression and tension are represented by the same symbols, but oriented in opposite directions. _____

b) All parts of an object have a specific symbol. _____

c) Translational motion identified on a diagram may be unidirectional or bidirectional. _____

d) Components of electrical circuits can be represented by symbols. _____

5. Indicate with a checkmark if the information refers to a technical diagram or a design plan. One item refers to both types of diagrams.

Information	Type of diagram	
	Technical	Design plan
a) Information on functioning of the object	☐	☐
b) Legend of materials	☐	☐
c) Name of parts	☐	☐
d) Types of guides	☐	☐
e) Symbols of movements	☐	☐
f) Information on construction of the object	☐	☐

6. Draw the appropriate symbol.

a) **Tension**

c) **Bidirectional helical movement**

b) **Rotational guide**

d) **Light bulb**