

МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ РОССИЙСКОЙ ФЕДЕРАЦИИ  
Федеральное государственное бюджетное образовательное учреждение  
высшего профессионального образования  
«МОСКОВСКИЙ ГОСУДАРСТВЕННЫЙ СТРОИТЕЛЬНЫЙ УНИВЕРСИТЕТ»

Е.В. Бессонова  
О.А. Просяновская  
И.К. Кириллова

# АНГЛИЙСКИЙ ЯЗЫК

Учебное пособие

*для студентов бакалавриата  
по направлению подготовки  
20.03.01 «Техносферная безопасность»*

Москва 2014

УДК 811.111  
ББК 81.2Англ  
Б53

**Рецензенты:**

кандидат педагогических наук *Е.А. Алешугина*,  
доцент кафедры иностранных языков Нижегородского государственного  
архитектурно-строительного университета (ННГАСУ);

кандидат педагогических наук *Н.С. Мерзлякова*,  
доцент кафедры общих гуманитарных и социальных дисциплин  
Кумертауского филиала ФГБОУ ВПО  
«Оренбургский государственный университет»;

кандидат филологических наук *Я.В. Зубкова*,  
доцент кафедры иностранных языков  
и профессиональной коммуникации ФГБОУ ВПО «МГСУ»

**Бессонова, Е.В.**

**Б53**     Английский язык : учебное пособие для студентов бакалавриата по направлению подготовки 20.03.01 «Техносферная безопасность» / Е.В. Бессонова, О.А. Просянновская, И.К. Кириллова ; М-во образования и науки Росс. Федерации, Моск. гос. строит. ун-т. Москва : МГСУ, 2014. 96 с.  
ISBN 978-5-7264-0930-6

Содержит широкий спектр упражнений по конкретной тематике, обогащающий словарный запас специальной технической лексики студентов, информирует о составлении устного и письменного высказывания. Грамматические упражнения способствуют углублению знаний английской грамматики, развитию навыков осознанного употребления грамматических форм, а также дают возможность изучающим язык самостоятельно совершенствовать свои знания английской грамматики.

Для бакалавров по направлению подготовки 270800 «Техносферная безопасность».

**УДК 811.111  
ББК 81.2Англ**

ISBN 978-5-7264-0930-6

© ФГБОУ ВПО «МГСУ», 2014

## Unit one

### SCIENCE AND SCIENTISTS OF THE PAST

#### 1. Answer the questions.

1. What discoveries in the history of mankind do you regard as break-throughs?
2. What inventions in the history of mankind do you regard as most important?
3. Which of the centuries in your opinion saw the greatest inventions and discoveries?
4. Can you remember any well-known scientists, explorers, inventors and discoverers?
5. What makes the work of a scientist dull on the one hand and exciting on the other?

#### 2. What do these abbreviations stand for? Match the abbreviations with the full forms (1-9) below. What are these measurements used for? Why are Arabic numbers used in mathematics?

cm kg l ml g  $(x)^2$   $(x)^3$  km m

centimetre /'sentimi:tə/      metre/'mi:tə/  
cubic /'kju:bik/      gram /græm/  
kilogram/'kɪləgræm/      litre/'li:tə/  
kilometre/'kɪləmi:tə/      millilitre /'mɪlɪli:tə/  
square /skweə/

#### 3. How do you say these numbers in English? Write your answers.

1. 462
2. 2 1/2
3. 2,345
4. 6.75
5. 0.25
6. 3 2/3
7. 1, 250,000
8. 10.04
9. 47%
10. 3 July
11. 602 8477 (phone number)

12.  $-5^{\circ}$  centigrade
13. In 1996
14. In 2006
15. In 847

**4. Answer these questions. Write your answers in words.**

When were you born?

How much do you weigh?

What is your phone number?

What is the approximate population of your country?

What is the normal temperature of a healthy person?

How many kilometers are there in a mile?

**5. Match each metric measurement with its equivalent.**

|                       |                                        |
|-----------------------|----------------------------------------|
| $0^{\circ}\text{C}$   | $1/10$ th of the earth's circumference |
| $1\text{ dm}^3$       | 1 kg                                   |
| weight of 1 L water   | 1 dm                                   |
| 1,000 kg of water     | 1 mm                                   |
| 1,000 m               | 1 m                                    |
| $1/10\text{ m}$       | boiling point of water                 |
| $1/100\text{ m}$      | 1 cm                                   |
| $1/1000\text{ m}$     | freezing point of water                |
| 10 m                  | 100 dm                                 |
| $100^{\circ}\text{C}$ | volume of 1 L water                    |
| 1 m                   | 1 t                                    |
| 10 dm                 | 1 km                                   |

**6. What do you know about the metric measurement system? Work with a partner and discuss these questions.**

1. In which country was the metric system developed: the USA, France, or Greece?
2. How did people decide how long a metre should be?
3. How big is a decimetre:  $1/10$  of a metre or 10 metres?
4. What's another definition of the volume of a cubic decimetre?
5. How much does a litre of water weigh? And how much do a thousand litres of water weigh?
6. Which countries don't use the metric system of measurements?
7. How many non-metric units of measurement can you name?

## 7. Read this article and check your answers.

### *Measuring the world*

Back in the eighteenth century, French scientists wanted to create an ideal system of measurement. To ensure that measurement units would remain the same from place to place, they looked for constants in nature to form the basis of a new system. At that time they believed the circumference of the earth never changed, so they based the unit of length on the earth's polar quadrant. The distance from the equator to the pole was calculated and divided by ten million. That measurement became the metre, the foundation of the metric system.

Multiples of ten are core to the metric system. A thousand metres is a kilometre and on a descending scale, a tenth of a metre is a decimetre, a hundredth is a centimetre, and a thousandth is a millimetre. The litre was defined as a volume equal to a cubic decimetre and weights were also derived from natural constants. One kilogram was the mass of one litre of water at its melting point. So a thousand litres of water at zero degrees Celsius weighs 1,000 kg, or one metric tonne.

The International System of Units is the modern form of the metric system and its units of measurement are used in science and business around the world. The USA, however, is a significant exception. Non-metric (imperial) measurements that date back historically to connections with Britain are still widely used. So the weather forecast tells you the temperature in degrees Fahrenheit and people generally think in terms of old measurements like ounces and yards.

In the UK, metric measurement now dominates, but there are still areas of life where people use old imperial measurements. So someone might describe their height in terms of feet and inches, or their weight in terms of stones and pounds. They might talk about the fuel consumption of their cars in terms of miles per gallon, and in British pubs, people still buy their beer in pints.

## 8. Answer these questions.

1. What fraction of the earth's polar quadrant is a metre?
2. What number do you have to multiply a metre by to get a kilometre?
3. What number do you have to divide a metre by to get a decimetre?
4. How many examples of imperial measurements can you find in the article?

**9. What do the non-metric quantities measure? Tick the correct box.**

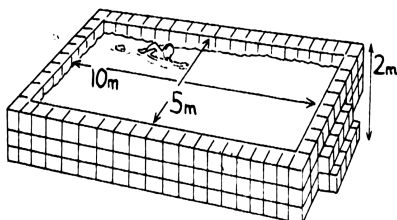
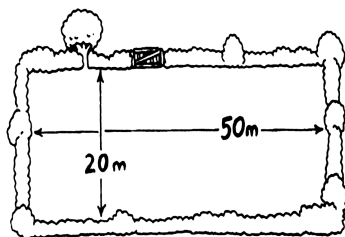
|                        | weight | volume | pressure | temperature | length/<br>height |
|------------------------|--------|--------|----------|-------------|-------------------|
| degrees Fahrenheit     |        |        |          |             |                   |
| foot                   |        |        |          |             |                   |
| gallon                 |        |        |          |             |                   |
| inch                   |        |        |          |             |                   |
| ounce                  |        |        |          |             |                   |
| pint                   |        |        |          |             |                   |
| pound                  |        |        |          |             |                   |
| stone                  |        |        |          |             |                   |
| yard                   |        |        |          |             |                   |
| pounds per square inch |        |        |          |             |                   |

**10. Complete the table.**

**DIMENSIONS**

| Noun   | Adjective | Questions                                                         |
|--------|-----------|-------------------------------------------------------------------|
| length | long      | How long is it?<br>What's the length?                             |
| depth  | wide      |                                                                   |
| weight | high/tall | What's the weight?<br>How heavy is it?<br>How much does it weigh? |

**11. Using nouns and adjectives from the table write down the dimensions of the field and the swimming pool.**



**12. Match these non-metric measurements to their metric equivalents.**

|                |                       |
|----------------|-----------------------|
| 1 mile         | 1 metric tonne        |
| 100 mph        | 11.7 L/100 kilometers |
| 3.94 inches    | 1.6 kilometres        |
| 2,205 lb       | 56.8 centilitres      |
| 10 feet        | 3.05 metres           |
| 0° Fahrenheit  | 74.6 kW               |
| 10 mpg         | 160 km/h              |
| 100 hp         | 100 mm                |
| 1 ounce        | -17.8°Celsius         |
| 1 British pint | 28 gm                 |

**13. Complete the sentences with the following words:**

*area, capacity, distance, length, liquid (quantity), speed, weight, height*

1. The ..... of the Eiffel Tower in Paris is about three hundred meters.
2. The ..... of the Charles Bridge in Prague is five hundred and sixteen metres.
3. The surface ..... of Lake Balaton is five hundred and ninety-three square kilometers.
4. The maximum ..... limit on express ways in Poland is one hundred and ten kilometres per hour.
5. The ..... of the bell in Dubrovnik's city tower is two thousand kilograms.
6. The ..... between Bratislava and Budapest is about two hundred kilometres.
7. A magnum champagne bottle can hold one point five litres of .....
8. The engine ..... of a Formula One car is three thousand cubic centimetres.

**14. Put these standard international (SI) units into the correct column. Look at the pronunciation of the words in English and say them.**

ampere, Celsius, curie, hertz, joule, kelvin, newton, ohm, pascal, volt, watt

| Chemistry | Electricity | Physics | Temperature |
|-----------|-------------|---------|-------------|
|           |             |         |             |

**15. Complete the definitions below with the units and the people in the box.**

ampere, Celsius, curie, hertz, joule, kelvin, newton, ohm, pascal, volt, watt

André Marie Ampère (1775–1836)  
Anders Celsius (1701–1744)  
Marie Curie (1867–1934)  
Heinrich Hertz (1857–1894)  
James Prescott Joule (1818–1889)  
Lord Kelvin (1824–1907)  
Georg Simon Ohm (1787–1854)  
Blaise Pascal (1623–1662)  
Sir Isaac Newton (1643–1727)  
Count Alessandro Volta (1745–1827)  
James Watt (1736–1819)

1. A is a unit of pressure equal to one newton per square metre named after ..... a French scientist.
2. A ..... is a unit of force named after ..... an English mathematician.
3. .... is the temperature scale that has the freezing point of water as  $0^{\circ}\text{C}$  and the boiling point as  $100^{\circ}\text{C}$ . The scale was developed by a Swedish astronomer, .....
4. A ..... is an amount of electric power. It is equal to one joule per second. It's named after ....., a Scottish engineer and inventor.
5. A ..... is a unit of electric force named after ....., an Italian physicist and pioneer in the study of electricity.
6. An ..... is a unit of electric current named after ..... a French mathematician and physicist, a pioneer in electrodynamics.
7. An ..... is a unit of electrical resistance named after ..... a German physicist.
8. A ..... is a unit of energy named after a British physicist.
9. .... is the temperature scale that registers absolute zero ( $-273.15^{\circ}\text{C}$ ) as  $0^{\circ}\text{K}$ . It's named after ..... a British scientist.
10. A ..... is a frequency equal to one cycle per second named after ..... a German physicist.
11. A ..... is a unit of radioactivity. It's named after ..... a Polish-born chemist who discovered radioactivity in several elements.

**16. Work in pairs. Practise asking and answering questions with a partner.**

**A** — Use the information below.

**B** — Use the information on page 19.

**A:** Ask **B** for the information you need to complete the sentences and answer the questions.

1. *Example: How wide is the English channel at its narrowest point?*
2. The English channel is only.....wide at its narrowest point.
3. The Trans-Canada highway is 7,699 km long.
4. Light travels at a speed of around.....
5. Because of cosmic dust falling from space, the Earth's weight increases by about 10 tonnes every day.
6. A human hair is strong enough to lift a weight of .....
7. The East Rand mine in South Africa is 3.9 km deep.
8. The Taipei 101 building in Taiwan is ..... high.
9. A redwood tree can grow to a height of over 100 m.
10. The length of a day on Venus is .....
11. An Olympic swimming pool is at least 2 m deep.
12. The average weight of a male chimpanzee is .....
13. The Blue Bridge in St Petersburg is the widest bridge in the world. It's 97.3 m wide.

**17. Read the text. Match the bold words in the text to the labels on the picture.**

**Leonardo da Vinci**

In the 1400s, long before the metric system was invented, Leonardo da Vinci wanted to make the connection between measurements and nature. His famous 'Vitruvian Man' drawing shows the connections between various measurements. At da Vinci's time, both cubit and pace were common measurements of length. The notes around the drawing indicate that:

- a **palm**<sup>1</sup> is the width of four fingers.
- a **foot**<sup>2</sup> is the width of four palms (about 12 inches).
- a cubit is the width of six palms.
- a man's height is four cubits (and thus 24 palms).
- a pace is four cubits.
- the length of a man's outspread **arms**<sup>3</sup> is equal to his height.
- the distance from the **hairline**<sup>4</sup> to the bottom of the **chin**<sup>5</sup> is one tenth of a man's height.