APPENDIX 7

MATHEMATICAL SYMBOLS

MATHEMATICAL SYMBOLS

NUMBERS

WHOLE NUMBERS – ЦЕЛЫЕ ЧИСЛА			
1368 9752	one / a thousand three hundred and sixty-eight nine thousand seven hundred and fifty-two	*abstract number* отвлеченное число *a four-figure number* четырехзначное число	**9752:** **9** – thousands – тысячи **7** – hundreds – сотни **5** – tens – десятки **2** – units – единицы
6 m	six metres	*concrete number* именованное число	
22 145	twenty-two a hundred and forty-five	*cardinal number* количественное число	
2nd 145th	twenty-**second** a hundred and forty-**fifth**	*ordinal number* порядковое число	
+10	plus ten	*positive number* положительное число	
-10	minus ten	*negative number* отрицательное число	
1, 3, 5, 7		*odd numbers* нечетные числа	
2, 4, 6, 8		*even numbers* четные числа	
3, 5, 7, 11		*prime numbers* простые числа	
FRACTIONS – ДРОБИ			
1/3 2/3	one third / a third two thirds	*proper fraction* правильная дробь	**1/3:** **1** – numerator – числитель **3** – denominator – знаменатель
3/4	three quarters		
1/7 3/7	one seventh / a seventh three sevenths		
7/5	seven fifths	*improper fraction* неправильная дробь	
9/3	nine thirds (when cancelled down produces a whole number)		
		} *vulgar fraction* простая дробь	
0.25	zero **point** two five oh [əʊ] **point** two five **point** two five nought **point** two five	*decimal fraction* десятичная дробь	**0.257:** **2** – tenths – десятые **5** – hundredths – сотые **7** – thousandths – тысячные
71.36	seventy-one **point** three six	In English writing a decimal **point** is used in decimal fractions (instead of a decimal **comma** in Russian writing).	
25.448	twenty-five **point** double four eight		
MIXED NUMBERS – СМЕШАННЫЕ ЧИСЛА			
$1\frac{1}{2}$	one and a half		
$3\frac{5}{7}$	three and five sevenths		

Arabic ① and Roman ② numerals

①	1	2	3	4	5	6	7	8	9	10
②	I	II	III	IV	V	VI	VII	VIII	IX	X

①	20	30	40	49	50	60	70	80	90	99	100
②	XX	XXX	XL	XLIX / IL	L	LX	LXX	LXXX	XC	XCIX / IC	C

①	200	300	400	500	600	700	800	900	990	1000
②	CC	CCC	CD	D	DC	DCC	DCCC	CM	CMXC	M

APPENDIX 7

MATHEMATICAL SYMBOLS

FUNDAMENTAL ARITHMETICAL OPERATIONS

Symbol	Reading	Operation	Example	Basic Terms
=	is makes equals is equal to		1 + 3 = 4 '1 plus 3 **is** 4' '1 plus 3 **makes** 4' '1 plus 3 **equals** 4' '1 plus 3 **is equal to** 4'	= equal(s) sign / sign of equality / equality sign – знак равенства
+	plus added to	*addition (adding)* сложение	1 + 3 = 4 '1 **plus** 3 is equal to 4' '1 **added to** 3 makes 4' '1 **and** 3 is (are) 4'	+ positive / plus sign / sign of addition – знак вычитания **1** *and* **3** – the addends / terms of the sum– слагаемые **4** – the sum – сумма
-	minus	*subtraction (subtracting)* вычитание	8 – 2 = 6 '8 **minus** 2 equals 6' '2 **from** 8 **leaves** 6' '**difference between** 8 **and** 2 is 6'	- negative / minus sign / sign of subtraction – знак вычитания **8** – the minuend – уменьшаемое **2** – the subtrahend – вычитаемое **6** – the difference / remainder – разность
±				± double sign – знак ±
×	times multiplied by	*multiplication (multiplying)* [1] умножение	5 × 7 = 35 '5 **multiplied by** 7 is 35' '5 **times** 7 is equal to 35' '**the product of** 5 **and** 7 is 35'	x multiplication sigh – знак умножения **5** *and* **7** – the factors – сомножители **5** – the multiplicand – множимое **7** – the multiplier – множитель **35** – the product – произведение
: ÷	divided by	*division (dividing)* [2] деление	18 : 9 = 2 '18 **divided by** 9 makes 2'	: division sign – знак деления **18** – the dividend – делимое **9** – the divisor – делитель **2** – the quotient – частное

[1] – The method of expressing the multiplication is: **A × n** *or* **A·n** *or* **An** *or* **A n** (with one space between).

[2] – The division of units is shown as: **m:n** *or* **m/s** *or* **m·s^{-1}** *or* **m s^{-1}** (with one space between). This avoids confusion in cases such as: **ms^{-1}** *and* **m s^{-1}**. The first is read as '*per millisecond*', the second as '*metres per second*'.

	In addition to the normal symbols, used in arithmetic, the following are used with the SI units:	
x ≠ y	**x** is not equal to **y** / **x** is unequal to **y**	
x ≈ y	**x** is approximately equal to **y**	
x ∝ y	**x** is proportional to **y**	
x > y **x < y**	**x** is larger /greater/ than **y** **x** is smaller /less/ than **y**	x < y < z y **is greater than** x but **less than** z
x ≤ y **x ≥ y**	**x** is smaller /less/ than or equal to **y** **x** is larger /greater/ than or equal to **y**	
x ≡ y	**x** is identical to **y** / **x** is equivalent to **y** / **x** is identically equal to **y**	
x ∈ S	**x** belongs to **S**	
x ∉ S	**x** doesn't belong to **S**	
S ⊆ T	**S** is a subset of **T**	**set** – множество; **subset** - подмножество
↑	increases	
↓	decreases	

APPENDIX 7
MATHEMATICAL SYMBOLS
ADVANCED ARITHMETICAL OPERATIONS

Symbol	Reading	Operation	Example	Basic Terms
a^n a^{-n} a^2	**a** to the **n-th** (power) / the **n-th** power of **a** **a** to the **minus n-th** (power) / the **minus n-th** power of **a** **a** square / squared	*involution (powering, raising to a power)* возведение в степень	$3^4 = 81$ '3 **to the fourth** is 81' '3 **to the fourth power** is 81' '**the fourth power of** 3 is 81'	**3** – the base – основание **4** – the exponent / index – показатель степени **81** – value of the power – значение степени
$\sqrt{a}$ $\sqrt[3]{a}$ $\sqrt[n]{a}$	the square root of **a** the cube root of **a** the **n-th** root of **a**	*evolution (extracting a root)* извлечение корня	$\sqrt[5]{32} = 2$ '**the fifth root of** 32 is 2'	**5** – the index /degree/ of the root – показатель корня **32** – the radicand – подкоренное выражение **2** – value of the root – значение корня
		equations уравнения		
( ) [ ] { }	parentheses round brackets brackets square brackets braces	*simple equation* линейное уравнение, уравнение первой степени	$5x + 4 = 14$	**5** *and* **4** – the coefficients – коэффициенты **x** – the unknown quantity – неизвестная величина
		identical equation тождественное уравнение	$4a + 6ab - 2ac = 2a(2 + 3b - c)$	**a, b** *and* **c** – algebraic symbols – алгебраические символы
		conditional equation условное уравнение	$2 : 50 = 4 : x$ '2 **is to** 50 **as** 4 **is to** x' $x = 100$	**x = 100** – solution – решение
$\mathbf{Log_n a}$	logarithm of **a** to the base of **n**	*logarithmic calculation* логарифмические вычисления	$Log_{10}3 = 0.4771$ '**logarithm of** 3 **to the base of** 10 **is** 0.4771'	**10** – the base – основание **3** – *number whose logarithm is required* **0.4771** – the logarithm – логарифм **0.** – the characteristic – характеристика **4771** – the mantissa – мантисса

APPENDIX 7

MATHEMATICAL SYMBOLS

HIGHER MATHEMATICS

Symbol	Reading	Operation	Example	Basic Terms
a_1 a_n $\sum$ ∞	**a** sub **one**, **a** first **a** sub **n** summation infinity	*series* ряд 1) *finite series* конечный ряд 2) *infinite series* бесконечный ряд	1) $a_1 + a_2 + a_3 + \ldots a_n = \sum_1^N a_n$ 2) $a_1 + a_2 + a_3 + \ldots a_n = \sum_1^\infty a_n$	a_1, a_2, a_3 – elements – элементы a_n – general term – общий термин / элемент **N**, ∞ – upper limit – верхний предел **1** – lower limit – нижний предел
		arithmetical series арифметический ряд	2 + 4 + 6 + 8 …	**2, 4, 6, 8** – elements – элементы
		geometric series геометрический ряд	2 + 4 + 8 + 16 …	**2, 4, 8, 16** – elements – элементы
		***infinitesimal calculus* исчисление бесконечно малых величин**		
$\frac{dy}{dx}$ **dx**	(the first) derivative of **y** with respect to **x** **dy** over **dx** differential of **x**	*derivative* производная	$\frac{dy}{dx}$ *or* dy/dx	**dy/dx** – derivative – производная **dy, dx** – the differentials – дифференциалы **d** – differential sign – знак дифференциала
Δx→0 $f(x)$ f' f'' f^n	delta **x** tends to 0 function of **x** *f* primed *f* second primed *f* n-th primed		$f'(x) = \lim_{\Delta x \to 0} = \lim_{\Delta x \to 0} \frac{f(x+\Delta x)-(fx)}{\Delta x}$	
∫	integral	*integral / integration* интеграл / интегрирование	$\int axdx = a\int xdx = \frac{ax^2}{2} + c$	∫– the integral sign – знак интеграла **x** – the variable – переменная (величина) **dx** – the differential – дифференциал **c** – constant of integration – постоянная интегрирования