

NAME: _____

DATE: _____

DSA
 Alternate Base Systems
 for Cross-Curricular Fun & Engineering Applications

HANDOUT FOR INDIVIDUAL WORK
 Level 5 – Multiplication

We use the Decimal system for counting. We start over when we count every 10 numbers.
 With the Dozenal system for counting we start over when we count every 12 numbers.

QUESTIONS:

Please fill in the multiplication tables for Decimal base-10

	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>
<i>1</i>	1									
<i>2</i>	2									
<i>3</i>		6				18				
<i>4</i>										
<i>5</i>										50
<i>6</i>										
<i>7</i>			21							
<i>8</i>										
<i>9</i>								72		
<i>10</i>										

NAME: _____

DATE: _____

| | | | | | | | | | | |

Think about the Dozenal-base system:

One, two, three, four, five, six, seven, eight, nine, dec, el, ten.

Notice that in order to count up to 10 in dozenals, we must include two extra numbers,
Dec and El. Mathematicians have agreed to call the two extra Dozenal numbers Dec and El.

Nobody has ever decided which symbols we should use for Dec and El. Maybe you can help.

Below, please make up your own shapes for the two extra Dozenal numbers, Dec and El.

Draw them next to their names: DEC and EL and circle your best efforts for each number.

DEC

EL

NAME: _____

DATE: _____

DSA
 Alternate Base Systems
 for Cross-Curricular Fun & Engineering Applications

HANDOUT FOR INDIVIDUAL WORK
 Level 5 – Multiplication

Please fill in the multiplication table for Dozenal ("base-12")

	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	—	—	<i>10</i>
<i>1</i>	1											
<i>2</i>	2											
<i>3</i>		6				16						
<i>4</i>												
<i>5</i>												50
<i>6</i>												
<i>7</i>			19									
<i>8</i>												
<i>9</i>								60				
—												
—												
<i>10</i>				40								

Do you understand how different bases work? YES A LITTLE BIT NO

Fill in the tables on the backside. When your neighbor is done with the work, explain alternate-bases to him or her; then let your neighbor explain alternate bases to you.

NAME: _____

DATE: _____

Can you fill in the multiplication table for the Binary Base?

	1	10
1		
10		

Can you fill in the multiplication table for the Octal Base?

	1	2	3	4	5	6	7	10
1	1							
2	2							
3		6				22		
4								
5								50
6								
7			25					
10								

Can you fill in the multiplication table for the Hexadecimal Base?

	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	10
1	1															
2	2															
3		6				12										
4																
5								28								
6																
7			15								4D					
8																80
9																
A					32											
B														9A		
C												90				
D																
E								70								
F				3C											E1	
10										A0						