

Name: \_\_\_\_\_

### Conversions Station

#### Conversion Table

1 nanoliter (nL) = **.001  $\mu$ L**

1 milliliter (mL) = **1000  $\mu$ L**

1 liter (L) = **1000000  $\mu$ L**

- 2 mL = **2000**  $\mu$ L
- .0000000001 mL = \_\_\_\_\_  $\mu$ L
- .75 mL = \_\_\_\_\_  $\mu$ L
- .095 mL = \_\_\_\_\_  $\mu$ L
- .0025 mL = \_\_\_\_\_  $\mu$ L
- 24 nL = \_\_\_\_\_  $\mu$ L
- .009 nL = \_\_\_\_\_  $\mu$ L
- .0001 L = \_\_\_\_\_  $\mu$ L
- .0253 L = \_\_\_\_\_  $\mu$ L
- 28  $\mu$ L = \_\_\_\_\_ L
- 856  $\mu$ L = \_\_\_\_\_ L
- 20  $\mu$ L = \_\_\_\_\_ nL
- 0.20  $\mu$ L = \_\_\_\_\_ nL
- 634  $\mu$ L = \_\_\_\_\_ mL

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→ 29000  $\mu\text{L}$  = \_\_\_\_\_ mL

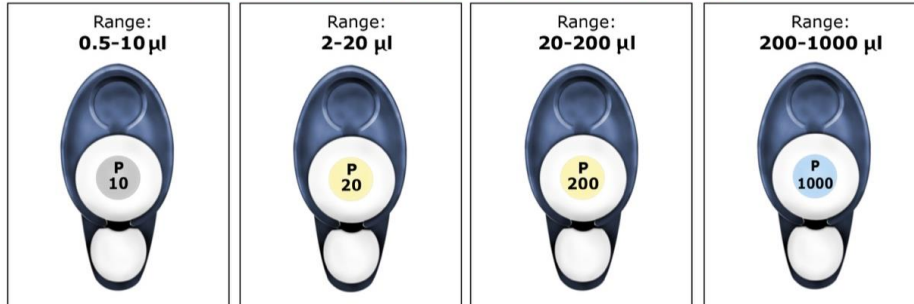
→ 29000  $\mu\text{L}$  = \_\_\_\_\_ mL

→ 29000  $\mu\text{L}$  = \_\_\_\_\_ mL

Name: \_\_\_\_\_

### Micropipette Identification Station

**NEVER crank the micropipets above or below their ranges!!**

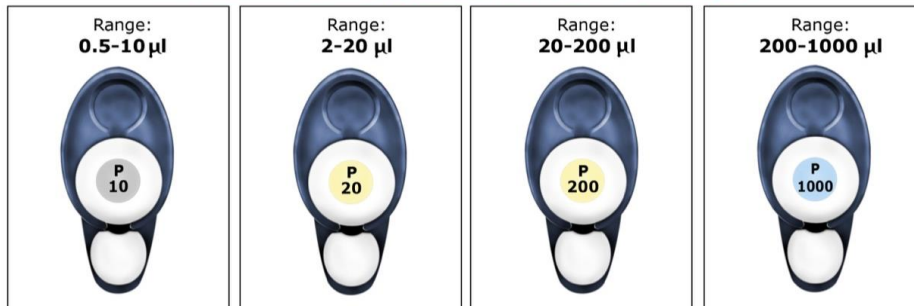


Volume	Required Micropipette	Volume	Required Micropipette	Volume	Required Micropipette
28 µL	p200	856 µL		9.9 µL	
199 µL		10.01 µL		6 µL	
.5 mL		.05 mL		.0089 mL	
.00000089 L		.00001 L		.000006 L	

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### Micropipette Identification Station

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.00000089 L		.00001 L		.000006 L	

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**Volume Indicator A Station**

Volume Indicator Display from **p20** and Volume ( $\mu\text{L}$ ) [if indicator is out of range, indicate with "X"]

<table border="1"> <tr><td>1</td><td rowspan="3">____ <math>\mu\text{L}</math></td></tr> <tr><td>9</td></tr> <tr><td>5</td></tr> </table>	1	____ $\mu\text{L}$	9	5	<table border="1"> <tr><td>0</td><td rowspan="3">____ <math>\mu\text{L}</math></td></tr> <tr><td>2</td></tr> <tr><td>0</td></tr> </table>	0	____ $\mu\text{L}$	2	0	<table border="1"> <tr><td>0</td><td rowspan="3">____ <math>\mu\text{L}</math></td></tr> <tr><td>0</td></tr> <tr><td>1</td></tr> </table>	0	____ $\mu\text{L}$	0	1	<table border="1"> <tr><td>0</td><td rowspan="3">____ <math>\mu\text{L}</math></td></tr> <tr><td>2</td></tr> <tr><td>1</td></tr> </table>	0	____ $\mu\text{L}$	2	1
1	____ $\mu\text{L}$																		
9																			
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<table border="1"> <tr><td>3</td><td rowspan="3">____ <math>\mu\text{L}</math></td></tr> <tr><td>5</td></tr> <tr><td>9</td></tr> </table>	3	____ $\mu\text{L}$	5	9	<table border="1"> <tr><td>0</td><td rowspan="3">____ <math>\mu\text{L}</math></td></tr> <tr><td>1</td></tr> <tr><td>0</td></tr> </table>	0	____ $\mu\text{L}$	1	0	<table border="1"> <tr><td>2</td><td rowspan="3">____ <math>\mu\text{L}</math></td></tr> <tr><td>0</td></tr> <tr><td>0</td></tr> </table>	2	____ $\mu\text{L}$	0	0	<table border="1"> <tr><td>2</td><td rowspan="3">____ <math>\mu\text{L}</math></td></tr> <tr><td>0</td></tr> <tr><td>5</td></tr> </table>	2	____ $\mu\text{L}$	0	5
3	____ $\mu\text{L}$																		
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2	____ $\mu\text{L}$																		
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2	____ $\mu\text{L}$																		
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5																			

Volume Indicator Display from **p200** and Volume ( $\mu\text{L}$ ) [if indicator is out of range, indicate with "X"]

<table border="1"> <tr><td>1</td><td rowspan="3">____ <math>\mu\text{L}</math></td></tr> <tr><td>9</td></tr> <tr><td>5</td></tr> </table>	1	____ $\mu\text{L}$	9	5	<table border="1"> <tr><td>0</td><td rowspan="3">____ <math>\mu\text{L}</math></td></tr> <tr><td>2</td></tr> <tr><td>0</td></tr> </table>	0	____ $\mu\text{L}$	2	0	<table border="1"> <tr><td>0</td><td rowspan="3">____ <math>\mu\text{L}</math></td></tr> <tr><td>0</td></tr> <tr><td>1</td></tr> </table>	0	____ $\mu\text{L}$	0	1	<table border="1"> <tr><td>9</td><td rowspan="3">____ <math>\mu\text{L}</math></td></tr> <tr><td>0</td></tr> <tr><td>0</td></tr> </table>	9	____ $\mu\text{L}$	0	0
1	____ $\mu\text{L}$																		
9																			
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0	____ $\mu\text{L}$																		
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3	____ $\mu\text{L}$																		
5																			
9																			
0	____ $\mu\text{L}$																		
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3	____ $\mu\text{L}$																		
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2	____ $\mu\text{L}$																		
0																			
5																			

Volume Indicator Display from **p1000** and Volume ( $\mu\text{L}$ ) [if indicator is out of range, indicate with "X"]

<table border="1"> <tr><td>1</td><td rowspan="2">____ <math>\mu\text{L}</math></td></tr> <tr><td>9</td></tr> </table>	1	____ $\mu\text{L}$	9	<table border="1"> <tr><td>0</td><td rowspan="2">____ <math>\mu\text{L}</math></td></tr> <tr><td>2</td></tr> </table>	0	____ $\mu\text{L}$	2	<table border="1"> <tr><td>0</td><td rowspan="2">____ <math>\mu\text{L}</math></td></tr> <tr><td>0</td></tr> </table>	0	____ $\mu\text{L}$	0	<table border="1"> <tr><td>0</td><td rowspan="2">____ <math>\mu\text{L}</math></td></tr> <tr><td>1</td></tr> </table>	0	____ $\mu\text{L}$	1
1	____ $\mu\text{L}$														
9															
0	____ $\mu\text{L}$														
2															
0	____ $\mu\text{L}$														
0															
0	____ $\mu\text{L}$														
1															

5		0		9		9	
3	____ $\mu\text{L}$	0	____ $\mu\text{L}$	0	____ $\mu\text{L}$	2	____ $\mu\text{L}$
5		1		0		0	
9		0		1		5	

Name: \_\_\_\_\_

**Volume Indicator B Station**

Volume Indicator Display from <b>p20</b> and Volume ( $\mu\text{L}$ ) [if indicator is out of range, indicate with "X"]							
	20 $\mu\text{L}$		2 $\mu\text{L}$		200 $\mu\text{L}$		3 $\mu\text{L}$
	6 $\mu\text{L}$		6.5 $\mu\text{L}$		2.2 $\mu\text{L}$		21.5 $\mu\text{L}$

Volume Indicator Display from <b>p200</b> and Volume ( $\mu\text{L}$ ) [if indicator is out of range, indicate with "X"]							
	200 $\mu\text{L}$		20 $\mu\text{L}$		18 $\mu\text{L}$		73 $\mu\text{L}$

<table border="1"> <tr><td></td><td rowspan="3">199 <math>\mu</math>L</td></tr> <tr><td></td></tr> <tr><td></td></tr> </table>		199 $\mu$ L			<table border="1"> <tr><td></td><td rowspan="3">89.5 <math>\mu</math>L</td></tr> <tr><td></td></tr> <tr><td></td></tr> </table>		89.5 $\mu$ L			<table border="1"> <tr><td></td><td rowspan="3">199.8 <math>\mu</math>L</td></tr> <tr><td></td></tr> <tr><td></td></tr> </table>		199.8 $\mu$ L			<table border="1"> <tr><td></td><td rowspan="3">21.5 <math>\mu</math>L</td></tr> <tr><td></td></tr> <tr><td></td></tr> </table>		21.5 $\mu$ L		
	199 $\mu$ L																		
	89.5 $\mu$ L																		
	199.8 $\mu$ L																		
	21.5 $\mu$ L																		

Volume Indicator Display from **p1000** and Volume ( $\mu$ L) [if indicator is out of range, indicate with "X"]

<table border="1"> <tr><td></td><td rowspan="3">1000 <math>\mu</math>L</td></tr> <tr><td></td></tr> <tr><td></td></tr> </table>		1000 $\mu$ L			<table border="1"> <tr><td></td><td rowspan="3">200 <math>\mu</math>L</td></tr> <tr><td></td></tr> <tr><td></td></tr> </table>		200 $\mu$ L			<table border="1"> <tr><td></td><td rowspan="3">895 <math>\mu</math>L</td></tr> <tr><td></td></tr> <tr><td></td></tr> </table>		895 $\mu$ L			<table border="1"> <tr><td></td><td rowspan="3">42 <math>\mu</math>L</td></tr> <tr><td></td></tr> <tr><td></td></tr> </table>		42 $\mu$ L		
	1000 $\mu$ L																		
	200 $\mu$ L																		
	895 $\mu$ L																		
	42 $\mu$ L																		

<table border="1"> <tr><td></td><td rowspan="3">420 <math>\mu</math>L</td></tr> <tr><td></td></tr> <tr><td></td></tr> </table>		420 $\mu$ L			<table border="1"> <tr><td></td><td rowspan="3">999 <math>\mu</math>L</td></tr> <tr><td></td></tr> <tr><td></td></tr> </table>		999 $\mu$ L			<table border="1"> <tr><td></td><td rowspan="3">140 <math>\mu</math>L</td></tr> <tr><td></td></tr> <tr><td></td></tr> </table>		140 $\mu$ L			<table border="1"> <tr><td></td><td rowspan="3">300 <math>\mu</math>L</td></tr> <tr><td></td></tr> <tr><td></td></tr> </table>		300 $\mu$ L		
	420 $\mu$ L																		
	999 $\mu$ L																		
	140 $\mu$ L																		
	300 $\mu$ L																		

Name: \_\_\_\_\_

Micropipette Prep, Summary Station



<p>Your protocol calls for <b>1000 uL</b> of distilled water.</p> <ol style="list-style-type: none"><li>1) How many uL of diluted water do you need? _____ <b>μL</b></li><li>2) Which micropipette will you need to use? <b>p</b>_____</li><li>3) What should your volume indicator display look like?</li></ol>	<p>Your protocol also calls for <b>.097 mL</b> of dNTPs.</p> <ol style="list-style-type: none"><li>1) How many uL of dNTPs do you need? _____ <b>μL</b></li><li>2) Which micropipette will you need to use? <b>p</b>_____</li><li>3) What should your volume indicator display look like?</li></ol>
<p>Your protocol also requires <b>.000005 L</b> of taq polymerase.</p> <ol style="list-style-type: none"><li>1) How many uL of taq polymerase do you need? _____ <b>μL</b></li><li>2) Which micropipette will you need to use? <b>p</b>_____</li><li>3) What should your volume indicator display look like?</li></ol>	<p><b>Review Questions:</b></p> <ol style="list-style-type: none"><li>1) Should you keep the same tip between reagents, yes or no? Why?</li><li>2) <b><u>When micropipetting your solution “up” (retrieving), you should...</u></b><ol style="list-style-type: none"><li>i. First, depress the plunger (<u>before/after</u>) the tip is in the liquid</li><li>ii. Next, depress the plunger to the (<u>first/second</u>) stop.</li><li>iii. Lastly, Release the plunger (<u>slowly/quickly</u>) while the tip is still in liquid.</li></ol><b><u>When transferring solution to the new tube, you should...</u></b><ol style="list-style-type: none"><li>i. First, have the tip (<u>hang freely/touch the bottom</u>) in the tube.</li><li>ii. Next, press the plunger to the (<u>first/second</u>) stop.</li></ol></li></ol>


Name: \_\_\_\_\_

Micropipette Prep, Summary Station


Your protocol calls for **1000 uL** of distilled water.

- 1) How many uL of diluted water do you need? \_\_\_\_\_ **uL**
- 2) Which micropipette will you need to use? p\_\_\_\_\_
- 3) What should your volume indicator display look like?

Your protocol also calls for **.097 mL** of dNTPs.

- 1) How many uL of dNTPs do you need? \_\_\_\_\_ **uL**
- 2) Which micropipette will you need to use? **p**\_\_\_\_\_
- 3) What should your volume indicator display look like?


Your protocol also requires **.000005 L** of taq polymerase.

- 1) How many uL of taq polymerase do you need? \_\_\_\_\_ **uL**
- 2) Which micropipette will you need to use? **p**\_\_\_\_\_
- 3) What should your volume indicator display look like?


**Review Questions:**

- 1) Should you keep the same tip between reagents, yes or no? Why?
- 2) **When micropipetting your solution “up” (retrieving), you should...**
  - i. First, depress the plunger (before/after) the tip is in the liquid
  - ii. Next, depress the plunger to the (first/second) stop.
  - iii. Lastly, Release the plunger (slowly/quickly) while the tip is still in liquid.**When transferring solution to the new tube, you should...**
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  - ii. Next, press the plunger to the (first/second) stop.