## Instructions:

In the chart below are the letters of DNA found at 10 different positions along chromosome \#20, from two different dogs:
a solid-color boxer dog \& a white boxer dog


Analyze these data (below) at each of the 10 positions on chromosome \#20 in the following way, and then come to the board to record your data in the chart on the board: For any position where the solid dog and the white dog differ in sequence, write into the chart the DNA letter possessed by the white dog at that position. For positions where the dogs are identical in sequence, do not write anything into that position in the chart.
position on chromosome 20

| 上 | $\infty$ | $\bigcirc$ | $\bigcirc$ | $\stackrel{-}{-}$ |  | $\infty$ |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\infty$ | $\infty$ | $\stackrel{\sim}{N}$ | - | m | 20 | $\stackrel{\sim}{7}$ | + | ก |  |  |
| ন | N | N | - | N | $\stackrel{\square}{0}$ | Ň | ${ }_{\square}^{+}$ | O' |  |  |
| N- | ล̆ | $\stackrel{\sim}{N}$ | m | $\infty$ | $\infty$ | or | $\stackrel{+}{0}$ | O |  |  |
| N | Ǹ | + | - | - | - | - | $\stackrel{1}{\sim}$ | $\stackrel{1}{\sim}$ |  |  |



White_Boxer_1 T G T C G G A T T C

## Instructions:

In the chart below are the letters of DNA found at 10 different positions along chromosome \#20, from two different dogs:
a solid-color boxer dog \& a white boxer dog


Analyze these data (below) at each of the 10 positions on chromosome \#20 in the following way, and then come to the board to record your data in the chart on the board: For any position where the solid dog and the white dog differ in sequence, write into the chart the DNA letter possessed by the white dog at that position. For positions where the dogs are identical in sequence, do not write anything into that position in the chart.
position on chromosome 20

| ก | $\infty$ | 0 | $\bigcirc$ | $\stackrel{-}{\sim}$ | $\cdots$ | $\infty$ |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| - | $\infty$ | $\stackrel{N}{\sim}$ | ก | m | $\stackrel{1}{0}$ | $\stackrel{\sim}{7}$ | $\stackrel{1}{\square}$ | $\bigcirc$ |  |  |
| न- | N | N | 상 | N | $\stackrel{0}{\circ}$ | Ñ | ${ }^{\infty}$ | - |  |  |
| N- | Na | $\stackrel{\sim}{N}$ | m | - | $\infty$ | or | ${ }^{\circ}$ | $\stackrel{ }{0}$ |  |  |
| Ǹ | Ǹ | N | N | + | + | + | $\stackrel{\sim}{\sim}$ | $\stackrel{\sim}{\sim}$ |  |  |



White_Boxer_2 T A T C A G G T T C

## Instructions:

In the chart below are the letters of DNA found at 10 different positions along chromosome \#20, from two different dogs:
a solid-color boxer dog \& a white boxer dog


Analyze these data (below) at each of the 10 positions on chromosome \#20 in the following way, and then come to the board to record your data in the chart on the board: For any position where the solid dog and the white dog differ in sequence, write into the chart the DNA letter possessed by the white dog at that position. For positions where the dogs are identical in sequence, do not write anything into that position in the chart.
position on chromosome 20

| ก | $\infty$ | $\bigcirc$ | $\bigcirc$ |  |  | $\infty$ |  | $\circ$0000 |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\infty$ | $\stackrel{+}{\infty}$ | N | $\bigcirc$ | m | $\stackrel{1}{0}$ | $\xrightarrow{\sim}$ | $\stackrel{\sim}{\square}$ |  |  |  |
| न- | N | N | - | N | $\stackrel{\sim}{\circ}$ | N' | $\stackrel{\infty}{+}$ |  |  |  |
| N | 大̇. | $\stackrel{\sim}{N}$ | m | $\infty$ | $\infty$ | \%) | b |  |  |  |
| N | Ǹ | - | - | - | - | + | $\stackrel{\sim}{\sim}$ | $\stackrel{1}{\sim}$ |  |  |

Solid_Boxer_3 $\quad$ C $\quad$ G $\quad G \quad A \quad A \quad T \quad A \quad T \quad T \quad C$ White_Boxer_3

C A T
C G
G G
T
T
C

## Instructions:

In the chart below are the letters of DNA found at 10 different positions along chromosome \#20, from two different dogs:
a solid-color boxer dog \& a white boxer dog


Analyze these data (below) at each of the 10 positions on chromosome \#20 in the following way, and then come to the board to record your data in the chart on the board: For any position where the solid dog and the white dog differ in sequence, write into the chart the DNA letter possessed by the white dog at that position. For positions where the dogs are identical in sequence, do not write anything into that position in the chart.
position on chromosome 20

| ก | $\infty$ | $\bigcirc$ | $\bigcirc$ |  |  | $\infty$ |  | $\circ$0000 |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\infty$ | $\stackrel{+}{\infty}$ | N | $\bigcirc$ | m | $\stackrel{1}{0}$ | $\xrightarrow{\sim}$ | $\stackrel{\sim}{\square}$ |  |  |  |
| न- | N | N | - | N | $\stackrel{\sim}{\circ}$ | N' | $\stackrel{\infty}{+}$ |  |  |  |
| N | 大̇. | $\stackrel{\sim}{N}$ | m | $\infty$ | $\infty$ | \%) | b |  |  |  |
| N | Ǹ | - | - | - | - | + | $\stackrel{\sim}{\sim}$ | $\stackrel{1}{\sim}$ |  |  |

Dog
Solid_Boxer_4 C A G A A T A T T
White_Boxer_4 C A T C $\quad$ G $\quad$ G $\quad$ G C C

## Instructions:

In the chart below are the letters of DNA found at 10 different positions along chromosome \#20, from two different dogs:
a solid-color boxer dog \& a white boxer dog


Analyze these data (below) at each of the 10 positions on chromosome \#20 in the following way, and then come to the board to record your data in the chart on the board: For any position where the solid dog and the white dog differ in sequence, write into the chart the DNA letter possessed by the white dog at that position. For positions where the dogs are identical in sequence, do not write anything into that position in the chart.
position on chromosome 20

| 上 | $\infty$ | $\bigcirc$ | $\bigcirc$ | $\stackrel{-}{-}$ |  | $\infty$ |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\infty$ | $\infty$ | $\stackrel{\sim}{N}$ | - | m | 20 | $\stackrel{\sim}{7}$ | + | ก |  |  |
| ন | N | N | - | N | $\stackrel{\square}{0}$ | Ň | ${ }_{\square}^{+}$ | O' |  |  |
| N- | ล̆ | $\stackrel{\sim}{N}$ | m | $\infty$ | $\infty$ | or | $\stackrel{+}{0}$ | O |  |  |
| N | Ǹ | + | - | - | - | - | $\stackrel{1}{\sim}$ | $\stackrel{1}{\sim}$ |  |  |

Dog
Solid_Boxer_5 C G G A A T A T T
White_Boxer_5 C A T C G G G C C T

## Instructions:

In the chart below are the letters of DNA found at 10 different positions along chromosome \#20, from two different dogs:
a solid-color boxer dog \& a white boxer dog


Analyze these data (below) at each of the 10 positions on chromosome \#20 in the following way, and then come to the board to record your data in the chart on the board: For any position where the solid dog and the white dog differ in sequence, write into the chart the DNA letter possessed by the white dog at that position. For positions where the dogs are identical in sequence, do not write anything into that position in the chart.
position on chromosome 20

| ก | $\infty$ | $\bigcirc$ | $\bigcirc$ |  |  | $\infty$ |  | $\circ$0000 |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\infty$ | $\stackrel{+}{\infty}$ | N | $\bigcirc$ | m | $\stackrel{1}{0}$ | $\xrightarrow{\sim}$ | $\stackrel{\sim}{\square}$ |  |  |  |
| न- | N | N | - | N | $\stackrel{\sim}{\circ}$ | N' | $\stackrel{\infty}{+}$ |  |  |  |
| N | 大̇. | $\stackrel{\sim}{N}$ | m | $\infty$ | $\infty$ | \%) | b |  |  |  |
| N | Ǹ | - | - | - | - | + | $\stackrel{\sim}{\sim}$ | $\stackrel{1}{\sim}$ |  |  |

Solid_Boxer_6 C $\quad$ G $\quad$ G $\quad A \quad A \quad$ T $\quad$ A $\quad$ T $\quad$ T $\quad$ C
White_Boxer_6 $C \quad G \quad G \quad A \quad G \quad G \quad G \quad C \quad C \quad T$

## Instructions：

In the chart below are the letters of DNA found at 10 different positions along chromosome \＃20，from two different dogs：
a solid－color boxer dog \＆a white boxer dog


Analyze these data（below）at each of the 10 positions on chromosome \＃20 in the following way，and then come to the board to record your data in the chart on the board： For any position where the solid dog and the white dog differ in sequence，write into the chart the DNA letter possessed by the white dog at that position．For positions where the dogs are identical in sequence，do not write anything into that position in the chart．
position on chromosome 20

| 上 | $\infty$ | $\bigcirc$ | $\bigcirc$ |  | $\cdots$ | $\infty$ |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\infty$ | $\pm$ | N | H | m | $\stackrel{1}{0}$ | $\stackrel{N}{\sim}$ | $\stackrel{\sim}{\square}$ | ． |  |  |
| ন̇ | N | ${ }^{\text {N}}$ | － | N | $\stackrel{+}{0}$ | N＇ | － | O＇ |  |  |
|  | ล̇ | $\stackrel{\sim}{N}$ | m | $\infty$ | － | の＇ | $\stackrel{+}{6}$ | O－ |  |  |
| Ǹ | N | ＋ | － | － | N | ＋ | $\stackrel{1}{N}$ | $\stackrel{\text { N゙ }}{ }$ |  |  |

Solid＿Boxer＿7 C A G A A T A C C T
White＿Boxer＿7 C A T C G G G C C C

## Instructions:

In the chart below are the letters of DNA found at 10 different positions along chromosome \#20, from two different dogs:
a solid-color boxer dog \& a white boxer dog


Analyze these data (below) at each of the 10 positions on chromosome \#20 in the following way, and then come to the board to record your data in the chart on the board: For any position where the solid dog and the white dog differ in sequence, write into the chart the DNA letter possessed by the white dog at that position. For positions where the dogs are identical in sequence, do not write anything into that position in the chart.
position on chromosome 20

| ก | $\infty$ | $\bigcirc$ | $\bigcirc$ |  |  | $\infty$ |  | $\circ$0000 |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\infty$ | $\stackrel{+}{\infty}$ | N | $\bigcirc$ | m | $\stackrel{1}{0}$ | $\xrightarrow{\sim}$ | $\stackrel{\sim}{\square}$ |  |  |  |
| न- | N | N | - | N | $\stackrel{\sim}{\circ}$ | N' | $\stackrel{\infty}{+}$ |  |  |  |
| N | 大̇. | $\stackrel{\sim}{N}$ | m | $\infty$ | $\infty$ | \%) | b |  |  |  |
| N | Ǹ | - | - | - | - | + | $\stackrel{\sim}{\sim}$ | $\stackrel{1}{\sim}$ |  |  |

Solid_Boxer_8 T G G A A T A T T White_Boxer_8 C A G A G G G C C C

## Instructions:

In the chart below are the letters of DNA found at 10 different positions along chromosome \#20, from two different dogs:
a solid-color boxer dog \& a white boxer dog


Analyze these data (below) at each of the 10 positions on chromosome \#20 in the following way, and then come to the board to record your data in the chart on the board: For any position where the solid dog and the white dog differ in sequence, write into the chart the DNA letter possessed by the white dog at that position. For positions where the dogs are identical in sequence, do not write anything into that position in the chart.
position on chromosome 20

| ก | $\infty$ | $\bigcirc$ | $\bigcirc$ | $\stackrel{-}{-}$ | $\cdots$ |  | 1 |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\infty$ | $\infty$ | $\stackrel{\sim}{N}$ | In | m | O | $\stackrel{+}{+}$ | - |  |  |  |
| ने | N | N | - | N | $\stackrel{\circ}{\circ}$ | N' | ${ }_{+}^{\infty}$ |  |  |  |
| - | 大̇ | $\stackrel{\sim}{N}$ | m | $\infty$ | $\infty$ | or | ${ }^{\circ}$ |  |  |  |
| Ǹ | Ǹ | - | - | - | - | + | $\stackrel{\sim}{\sim}$ | $\stackrel{\sim}{\sim}$ |  |  |

## C <br> 



C C
T
White_Boxer_9 C G G

C G
G G
C
C T

## Instructions:

In the chart below are the letters of DNA found at 10 different positions along chromosome \#20, from two different dogs:
a solid-color boxer dog \& a white boxer dog


Analyze these data (below) at each of the 10 positions on chromosome \#20 in the following way, and then come to the board to record your data in the chart on the board: For any position where the solid dog and the white dog differ in sequence, write into the chart the DNA letter possessed by the white dog at that position. For positions where the dogs are identical in sequence, do not write anything into that position in the chart.
position on chromosome 20


C C

## Instructions:

In the chart below are the letters of DNA found at 10 different positions along chromosome \#20, from two different dogs:
a solid-color boxer dog \& a white boxer dog


Analyze these data (below) at each of the 10 positions on chromosome \#20 in the following way, and then come to the board to record your data in the chart on the board: For any position where the solid dog and the white dog differ in sequence, write into the chart the DNA letter possessed by the white dog at that position. For positions where the dogs are identical in sequence, do not write anything into that position in the chart.
position on chromosome 20


Solid_Boxer_11 C A T C A T A T T C
White_Boxer_11 T G T C G G G C C T

## Instructions:

In the chart below are the letters of DNA found at 10 different positions along chromosome \#20, from two different dogs:
a solid-color boxer dog \& a white boxer dog


Analyze these data (below) at each of the 10 positions on chromosome \#20 in the following way, and then come to the board to record your data in the chart on the board: For any position where the solid dog and the white dog differ in sequence, write into the chart the DNA letter possessed by the white dog at that position. For positions where the dogs are identical in sequence, do not write anything into that position in the chart.
position on chromosome 20

| $\stackrel{\sim}{0}$ | $\stackrel{\infty}{\infty}$ | 9 | $\bigcirc$ | $\stackrel{-}{N}$ | $\cdots$ | $\stackrel{\sim}{\sim}$ | ${ }^{\sim}$ | $\bigcirc$ |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\infty$ | $\infty$ | N | ก | m | O | $\stackrel{\sim}{+}$ | $\stackrel{\sim}{\square}$ | $\bigcirc$ |  |  |
| ন | N | $\stackrel{\sim}{1}$ | -̀ | N | $\stackrel{\circ}{\circ}$ | ふ̌ | $\square^{\infty}$ | -i |  |  |
| N | O | $\stackrel{\sim}{N}$ | m | $\infty$ | $\infty$ | or | $\bigcirc$ | - |  |  |
| Ǹ | Ǹ | N | - | + | + | + | กั่ | $\stackrel{\text { N }}{ }$ |  |  |

Solid_Boxer_12 C $\quad$ G $G \quad A \quad A \quad T \quad A \quad C \quad T \quad C$
White_Boxer_12 C A T C G G G C C T

## Instructions:

In the chart below are the letters of DNA found at 10 different positions along chromosome \#20, from two different dogs:
a solid-color boxer dog \& a white boxer dog


Analyze these data (below) at each of the 10 positions on chromosome \#20 in the following way, and then come to the board to record your data in the chart on the board: For any position where the solid dog and the white dog differ in sequence, write into the chart the DNA letter possessed by the white dog at that position. For positions where the dogs are identical in sequence, do not write anything into that position in the chart.
position on chromosome 20

| $\stackrel{\sim}{0}$ | $\stackrel{\infty}{\infty}$ | 9 | $\bigcirc$ | $\stackrel{-}{N}$ | $\cdots$ | $\stackrel{\sim}{\sim}$ | ${ }^{\sim}$ | $\bigcirc$ |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\infty$ | $\infty$ | N | ก | m | O | $\stackrel{\sim}{+}$ | $\stackrel{\sim}{\square}$ | $\bigcirc$ |  |  |
| ন | N | $\stackrel{\sim}{1}$ | -̀ | N | $\stackrel{\circ}{\circ}$ | ふ̌ | $\square^{\infty}$ | -i |  |  |
| N | O | $\stackrel{\sim}{N}$ | m | $\infty$ | $\infty$ | or | $\bigcirc$ | - |  |  |
| Ǹ | Ǹ | N | - | + | + | + | กั่ | $\stackrel{\text { N }}{ }$ |  |  |

Solid_Boxer_13 T A T A A T A T T C
White_Boxer_13 T $G \quad G \quad A \quad G \quad G \quad G \quad T \quad T \quad C$

## Instructions:

In the chart below are the letters of DNA found at 10 different positions along chromosome \#20, from two different dogs:
a solid-color boxer dog \& a white boxer dog


Analyze these data (below) at each of the 10 positions on chromosome \#20 in the following way, and then come to the board to record your data in the chart on the board: For any position where the solid dog and the white dog differ in sequence, write into the chart the DNA letter possessed by the white dog at that position. For positions where the dogs are identical in sequence, do not write anything into that position in the chart.
position on chromosome 20

| $\stackrel{n}{0}$ | $\stackrel{\infty}{\infty}$ | 9 | $\bigcirc$ | $\stackrel{-}{N}$ | N | $\stackrel{\infty}{\sim}$ | 10 | $\bigcirc$ |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\infty$ | $\infty$ | N | - | m | $\xrightarrow{\circ}$ | $\stackrel{\sim}{-}$ | $\stackrel{\sim}{\square}$ | $\stackrel{ }{ }$ |  |  |
| -i | N | ${ }^{\sim}$ | -̀ | N | $\stackrel{\square}{\circ}$ | N' | ${ }_{\sim}^{\circ}$ | 0 |  | $\stackrel{\sim}{\sim}$ |
| N | - | $\stackrel{\sim}{N}$ | m | $\infty$ | $\infty$ | - | - | O |  |  |
| Ǹ | N | N | - | N | - | + | $\stackrel{1}{N}$ |  |  |  |

## Instructions:

In the chart below are the letters of DNA found at 10 different positions along chromosome \#20, from two different dogs:
a solid-color boxer dog \& a white boxer dog


Analyze these data (below) at each of the 10 positions on chromosome \#20 in the following way, and then come to the board to record your data in the chart on the board: For any position where the solid dog and the white dog differ in sequence, write into the chart the DNA letter possessed by the white dog at that position. For positions where the dogs are identical in sequence, do not write anything into that position in the chart.
position on chromosome 20

| $\bigcirc$ |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\infty$ | $\infty$ | $\stackrel{\sim}{N}$ | $\stackrel{7}{n}$ | $\stackrel{\sim}{m}$ | $\bigcirc$ | $\xrightarrow{\sim}$ | $\stackrel{1}{\square}$ | $\bigcirc$ |  |
| ने | N | N | - | N | $\stackrel{\sim}{\circ}$ | N' | ${ }_{\sim}^{\circ}$ | in | ก |
| N | ف̇ | $\stackrel{\sim}{N}$ | m | $\infty$ | $\infty$ | - | $\stackrel{+}{0}$ |  |  |
| N | N | - | N | - | - | + | $\stackrel{\sim}{\sim}$ | $\stackrel{\text { n }}{ }$ |  |

Solid_Boxer_15 C A $\quad$ G A A $\quad$ T $\quad$ A $\quad$ T $\quad$ T $\quad$ C White_Boxer_15 T G T C G G A T T C

