In [ ]:
```
import pandas as pd
df=pd.read_csv("Encoding Data.csv")
df
```

Out[2]:

| | id | bin_1 | bin_2 | nom_0 | ord_2 |
|---|---|---|---|---|---|
| **0** | 0 | F | N | Red | Hot |
| **1** | 1 | F | Y | Blue | Warm |
| **2** | 2 | F | N | Blue | Cold |
| **3** | 3 | F | N | Green | Warm |
| **4** | 4 | T | N | Red | Cold |
| **5** | 5 | T | N | Green | Hot |
| **6** | 6 | F | N | Red | Cold |
| **7** | 7 | T | N | Red | Cold |
| **8** | 8 | F | N | Blue | Warm |
| **9** | 9 | F | Y | Red | Hot |

In [ ]:
```
from sklearn.preprocessing import LabelEncoder,OrdinalEncoder
pm=['Hot','Warm','Cold']
e1=OrdinalEncoder(categories=[pm])
e1.fit_transform(df[["ord_2"]])
```

Out[3]:
```
array([[0.],
       [1.],
       [2.],
       [1.],
       [2.],
       [0.],
       [2.],
       [2.],
       [1.],
       [0.]])
```

In [ ]:
```
df['bo2']=e1.fit_transform(df[["ord_2"]])
df
```

Out[4]:

| | id | bin_1 | bin_2 | nom_0 | ord_2 | bo2 |
|---|---|---|---|---|---|---|
| **0** | 0 | F | N | Red | Hot | 0.0 |
| **1** | 1 | F | Y | Blue | Warm | 1.0 |
| **2** | 2 | F | N | Blue | Cold | 2.0 |
| **3** | 3 | F | N | Green | Warm | 1.0 |
| **4** | 4 | T | N | Red | Cold | 2.0 |
| **5** | 5 | T | N | Green | Hot | 0.0 |
| **6** | 6 | F | N | Red | Cold | 2.0 |
| **7** | 7 | T | N | Red | Cold | 2.0 |
| **8** | 8 | F | N | Blue | Warm | 1.0 |
| **9** | 9 | F | Y | Red | Hot | 0.0 |

In [ ]:
```
le=LabelEncoder()
dfc=df.copy()
dfc['ord_2']=le.fit_transform(dfc['ord_2'])
dfc
```

Out[5]:

| | id | bin_1 | bin_2 | nom_0 | ord_2 | bo2 |
|---|---|---|---|---|---|---|
| **0** | 0 | F | N | Red | 1 | 0.0 |
| **1** | 1 | F | Y | Blue | 2 | 1.0 |
| **2** | 2 | F | N | Blue | 0 | 2.0 |
| **3** | 3 | F | N | Green | 2 | 1.0 |
| **4** | 4 | T | N | Red | 0 | 2.0 |
| **5** | 5 | T | N | Green | 1 | 0.0 |
| **6** | 6 | F | N | Red | 0 | 2.0 |
| **7** | 7 | T | N | Red | 0 | 2.0 |
| **8** | 8 | F | N | Blue | 2 | 1.0 |
| **9** | 9 | F | Y | Red | 1 | 0.0 |

In [ ]:
```
from sklearn.preprocessing import OneHotEncoder
ohe = OneHotEncoder(sparse_output=False)  # Change 'sparse' to 'sparse_output'
df2 = df.copy()
enc = pd.DataFrame(ohe.fit_transform(df2[['nom_0']]))
df2 = pd.concat([df2, enc], axis=1)
df2
```

Out[8]:

| | id | bin_1 | bin_2 | nom_0 | ord_2 | bo2 | 0 | 1 | 2 |
|---|---|---|---|---|---|---|---|---|---|
| **0** | 0 | F | N | Red | Hot | 0.0 | 0.0 | 0.0 | 1.0 |
| **1** | 1 | F | Y | Blue | Warm | 1.0 | 1.0 | 0.0 | 0.0 |
| **2** | 2 | F | N | Blue | Cold | 2.0 | 1.0 | 0.0 | 0.0 |
| **3** | 3 | F | N | Green | Warm | 1.0 | 0.0 | 1.0 | 0.0 |
| **4** | 4 | T | N | Red | Cold | 2.0 | 0.0 | 0.0 | 1.0 |
| **5** | 5 | T | N | Green | Hot | 0.0 | 0.0 | 1.0 | 0.0 |
| **6** | 6 | F | N | Red | Cold | 2.0 | 0.0 | 0.0 | 1.0 |
| **7** | 7 | T | N | Red | Cold | 2.0 | 0.0 | 0.0 | 1.0 |
| **8** | 8 | F | N | Blue | Warm | 1.0 | 1.0 | 0.0 | 0.0 |
| **9** | 9 | F | Y | Red | Hot | 0.0 | 0.0 | 0.0 | 1.0 |

In [ ]:
```
pip install --upgrade category_encoders
```

```
Collecting category_encoders
  Downloading category_encoders-2.6.3-py2.py3-none-any.whl.metadata (8.0 kB)
Requirement already satisfied: numpy>=1.14.0 in /usr/local/lib/python3.10/dis
t-packages (from category_encoders) (1.26.4)
Requirement already satisfied: scikit-learn>=0.20.0 in /usr/local/lib/python
3.10/dist-packages (from category_encoders) (1.5.2)
Requirement already satisfied: scipy>=1.0.0 in /usr/local/lib/python3.10/dist
-packages (from category_encoders) (1.13.1)
Requirement already satisfied: statsmodels>=0.9.0 in /usr/local/lib/python3.1
0/dist-packages (from category_encoders) (0.14.3)
Requirement already satisfied: pandas>=1.0.5 in /usr/local/lib/python3.10/dis
t-packages (from category_encoders) (2.1.4)
Requirement already satisfied: patsy>=0.5.1 in /usr/local/lib/python3.10/dist
-packages (from category_encoders) (0.5.6)
Requirement already satisfied: python-dateutil>=2.8.2 in /usr/local/lib/pytho
n3.10/dist-packages (from pandas>=1.0.5->category_encoders) (2.8.2)
Requirement already satisfied: pytz>=2020.1 in /usr/local/lib/python3.10/dist
-packages (from pandas>=1.0.5->category_encoders) (2024.2)
Requirement already satisfied: tzdata>=2022.1 in /usr/local/lib/python3.10/di
st-packages (from pandas>=1.0.5->category_encoders) (2024.1)
Requirement already satisfied: six in /usr/local/lib/python3.10/dist-packages
(from patsy>=0.5.1->category_encoders) (1.16.0)
Requirement already satisfied: joblib>=1.2.0 in /usr/local/lib/python3.10/dis
t-packages (from scikit-learn>=0.20.0->category_encoders) (1.4.2)
Requirement already satisfied: threadpoolctl>=3.1.0 in /usr/local/lib/python
3.10/dist-packages (from scikit-learn>=0.20.0->category_encoders) (3.5.0)
Requirement already satisfied: packaging>=21.3 in /usr/local/lib/python3.10/d
ist-packages (from statsmodels>=0.9.0->category_encoders) (24.1)
Downloading category_encoders-2.6.3-py2.py3-none-any.whl (81 kB)
   ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 81.9/81.9 kB 2.0 MB/s eta 0:00:00
Installing collected packages: category_encoders
Successfully installed category_encoders-2.6.3
```

In [ ]:
```
from category_encoders import BinaryEncoder
df=pd.read_csv("data.csv")
df
```

Out[10]:

| | id | bin_1 | bin_2 | City | Ord_1 | Ord_2 | Target |
|---|---|---|---|---|---|---|---|
| **0** | 0 | F | N | Delhi | Hot | High School | 0 |
| **1** | 1 | F | Y | Bangalore | Warm | Masters | 1 |
| **2** | 2 | M | N | Mumbai | Very Hot | Diploma | 1 |
| **3** | 3 | M | Y | Chennai | Cold | Bachelors | 0 |
| **4** | 4 | M | Y | Delhi | Cold | Bachelors | 1 |
| **5** | 5 | F | N | Delhi | Very Hot | Masters | 0 |
| **6** | 6 | M | N | Chennai | Warm | PhD | 1 |
| **7** | 7 | F | N | Chennai | Hot | High School | 1 |
| **8** | 8 | M | N | Delhi | Very Hot | High School | 0 |
| **9** | 9 | F | Y | Delhi | Warm | PhD | 0 |

In [ ]:
```
be=BinaryEncoder()
nd=be.fit_transform(df['Ord_2'])
dfb=pd.concat([df,nd],axis=1)
dfb1=df.copy()
dfb
```

Out[11]:

| | id | bin_1 | bin_2 | City | Ord_1 | Ord_2 | Target | Ord_2_0 | Ord_2_1 | Ord_2_2 |
|---|---|---|---|---|---|---|---|---|---|---|
| **0** | 0 | F | N | Delhi | Hot | High School | 0 | 0 | 0 | 1 |
| **1** | 1 | F | Y | Bangalore | Warm | Masters | 1 | 0 | 1 | 0 |
| **2** | 2 | M | N | Mumbai | Very Hot | Diploma | 1 | 0 | 1 | 1 |
| **3** | 3 | M | Y | Chennai | Cold | Bachelors | 0 | 1 | 0 | 0 |
| **4** | 4 | M | Y | Delhi | Cold | Bachelors | 1 | 1 | 0 | 0 |
| **5** | 5 | F | N | Delhi | Very Hot | Masters | 0 | 0 | 1 | 0 |
| **6** | 6 | M | N | Chennai | Warm | PhD | 1 | 1 | 0 | 1 |
| **7** | 7 | F | N | Chennai | Hot | High School | 1 | 0 | 0 | 1 |
| **8** | 8 | M | N | Delhi | Very Hot | High School | 0 | 0 | 0 | 1 |
| **9** | 9 | F | Y | Delhi | Warm | PhD | 0 | 1 | 0 | 1 |

In [ ]:
```
from category_encoders import TargetEncoder
te=TargetEncoder()
cc=df.copy()
new=te.fit_transform(X=cc["City"],y=cc["Target"])
cc=pd.concat([cc,new],axis=1)
cc
```

Out[14]:

| | id | bin_1 | bin_2 | City | Ord_1 | Ord_2 | Target | City |
|---|---|---|---|---|---|---|---|---|
| **0** | 0 | F | N | Delhi | Hot | High School | 0 | 0.445272 |
| **1** | 1 | F | Y | Bangalore | Warm | Masters | 1 | 0.565054 |
| **2** | 2 | M | N | Mumbai | Very Hot | Diploma | 1 | 0.565054 |
| **3** | 3 | M | Y | Chennai | Cold | Bachelors | 0 | 0.525744 |
| **4** | 4 | M | Y | Delhi | Cold | Bachelors | 1 | 0.445272 |
| **5** | 5 | F | N | Delhi | Very Hot | Masters | 0 | 0.445272 |
| **6** | 6 | M | N | Chennai | Warm | PhD | 1 | 0.525744 |
| **7** | 7 | F | N | Chennai | Hot | High School | 1 | 0.525744 |
| **8** | 8 | M | N | Delhi | Very Hot | High School | 0 | 0.445272 |
| **9** | 9 | F | Y | Delhi | Warm | PhD | 0 | 0.445272 |

In [ ]:
```
import pandas as pd
from scipy import stats
import numpy as np
df=pd.read_csv("Data_to_Transform.csv")
df
```

Out[16]:

| | Moderate Positive Skew | Highly Positive Skew | Moderate Negative Skew | Highly Negative Skew |
|---|---|---|---|---|
| **0** | 0.899990 | 2.895074 | 11.180748 | 9.027485 |
| **1** | 1.113554 | 2.962385 | 10.842938 | 9.009762 |
| **2** | 1.156830 | 2.966378 | 10.817934 | 9.006134 |
| **3** | 1.264131 | 3.000324 | 10.764570 | 9.000125 |
| **4** | 1.323914 | 3.012109 | 10.753117 | 8.981296 |
| **...** | ... | ... | ... | ... |
| **9995** | 14.749050 | 16.289513 | -2.980821 | -3.254882 |
| **9996** | 14.854474 | 16.396252 | -3.147526 | -3.772332 |
| **9997** | 15.262103 | 17.102991 | -3.517256 | -4.717950 |
| **9998** | 15.269983 | 17.628467 | -4.689833 | -5.670496 |
| **9999** | 16.204517 | 18.052331 | -6.335679 | -7.036091 |

10000 rows × 4 columns

In [ ]:
```
np.log(df["Highly Positive Skew"])
```

Out[17]:

| | Highly Positive Skew |
|---|---|
| **0** | 1.063011 |
| **1** | 1.085995 |
| **2** | 1.087342 |
| **3** | 1.098720 |
| **4** | 1.102640 |
| **...** | ... |
| **9995** | 2.790522 |
| **9996** | 2.797053 |
| **9997** | 2.839253 |
| **9998** | 2.869515 |
| **9999** | 2.893275 |

10000 rows × 1 columns

**dtype:** float64

In [ ]:
```
np.reciprocal(df["Moderate Positive Skew"])
```

Out[18]:

| | Moderate Positive Skew |
|---|---|
| **0** | 1.111123 |
| **1** | 0.898026 |
| **2** | 0.864431 |
| **3** | 0.791057 |
| **4** | 0.755336 |
| **...** | ... |
| **9995** | 0.067801 |
| **9996** | 0.067320 |
| **9997** | 0.065522 |
| **9998** | 0.065488 |
| **9999** | 0.061711 |

10000 rows × 1 columns

**dtype:** float64

In [ ]:
```
np.sqrt(df["Highly Positive Skew"])
```

Out[19]:

| | Highly Positive Skew |
|---|---|
| **0** | 1.701492 |
| **1** | 1.721158 |
| **2** | 1.722317 |
| **3** | 1.732144 |
| **4** | 1.735543 |
| **...** | ... |
| **9995** | 4.036027 |
| **9996** | 4.049229 |
| **9997** | 4.135576 |
| **9998** | 4.198627 |
| **9999** | 4.248803 |

10000 rows × 1 columns

**dtype:** float64

In [ ]:
```
np.square(df["Highly Positive Skew"])
```

Out[20]:

| | Highly Positive Skew |
|---|---|
| **0** | 8.381452 |
| **1** | 8.775724 |
| **2** | 8.799396 |
| **3** | 9.001942 |
| **4** | 9.072800 |
| **...** | ... |
| **9995** | 265.348230 |
| **9996** | 268.837091 |
| **9997** | 292.512290 |
| **9998** | 310.762852 |
| **9999** | 325.886637 |

10000 rows × 1 columns

**dtype:** float64

In [ ]:
```
df["Highly Positive Skew_boxcox"],parameters=stats.boxcox(df["Highly Positive
df
```

Out[21]:

| | Moderate Positive Skew | Highly Positive Skew | Moderate Negative Skew | Highly Negative Skew | Highly Positive Skew_boxcox |
|---|---|---|---|---|---|
| **0** | 0.899990 | 2.895074 | 11.180748 | 9.027485 | 0.812909 |
| **1** | 1.113554 | 2.962385 | 10.842938 | 9.009762 | 0.825921 |
| **2** | 1.156830 | 2.966378 | 10.817934 | 9.006134 | 0.826679 |
| **3** | 1.264131 | 3.000324 | 10.764570 | 9.000125 | 0.833058 |
| **4** | 1.323914 | 3.012109 | 10.753117 | 8.981296 | 0.835247 |
| **...** | ... | ... | ... | ... | ... |
| **9995** | 14.749050 | 16.289513 | -2.980821 | -3.254882 | 1.457701 |
| **9996** | 14.854474 | 16.396252 | -3.147526 | -3.772332 | 1.459189 |
| **9997** | 15.262103 | 17.102991 | -3.517256 | -4.717950 | 1.468681 |
| **9998** | 15.269983 | 17.628467 | -4.689833 | -5.670496 | 1.475357 |
| **9999** | 16.204517 | 18.052331 | -6.335679 | -7.036091 | 1.480525 |

10000 rows × 5 columns

In [ ]:
```
df["Moderate Negative Skew_yeojohnson"],parameters=stats.yeojohnson(df["Modera
df
```

Out[22]:

| | Moderate Positive Skew | Highly Positive Skew | Moderate Negative Skew | Highly Negative Skew | Highly Positive Skew_boxcox | Moderate Negative Skew_yeojohnson |
|---|---|---|---|---|---|---|
| **0** | 0.899990 | 2.895074 | 11.180748 | 9.027485 | 0.812909 | 29.137807 |
| **1** | 1.113554 | 2.962385 | 10.842938 | 9.009762 | 0.825921 | 27.885274 |
| **2** | 1.156830 | 2.966378 | 10.817934 | 9.006134 | 0.826679 | 27.793303 |
| **3** | 1.264131 | 3.000324 | 10.764570 | 9.000125 | 0.833058 | 27.597362 |
| **4** | 1.323914 | 3.012109 | 10.753117 | 8.981296 | 0.835247 | 27.555370 |
| **...** | ... | ... | ... | ... | ... | ... |
| **9995** | 14.749050 | 16.289513 | -2.980821 | -3.254882 | 1.457701 | -1.949345 |
| **9996** | 14.854474 | 16.396252 | -3.147526 | -3.772332 | 1.459189 | -2.028952 |
| **9997** | 15.262103 | 17.102991 | -3.517256 | -4.717950 | 1.468681 | -2.199693 |
| **9998** | 15.269983 | 17.628467 | -4.689833 | -5.670496 | 1.475357 | -2.697151 |
| **9999** | 16.204517 | 18.052331 | -6.335679 | -7.036091 | 1.480525 | -3.311401 |

10000 rows × 6 columns

In [ ]:
```
df.skew()
```

Out[23]:

| | 0 |
|---|---|
| **Moderate Positive Skew** | 0.656308 |
| **Highly Positive Skew** | 1.271249 |
| **Moderate Negative Skew** | -0.690244 |
| **Highly Negative Skew** | -1.201891 |
| **Highly Positive Skew_boxcox** | 0.023089 |
| **Moderate Negative Skew_yeojohnson** | -0.119651 |

**dtype:** float64

In [ ]:
```
df["Highly Negative Skew_yeojohnson"],parameters=stats.yeojohnson(df["Highly N
df.skew()
```

Out[24]:

| | 0 |
|---|---|
| **Moderate Positive Skew** | 0.656308 |
| **Highly Positive Skew** | 1.271249 |
| **Moderate Negative Skew** | -0.690244 |
| **Highly Negative Skew** | -1.201891 |
| **Highly Positive Skew_boxcox** | 0.023089 |
| **Moderate Negative Skew_yeojohnson** | -0.119651 |
| **Highly Negative Skew_yeojohnson** | -0.274676 |

**dtype:** float64

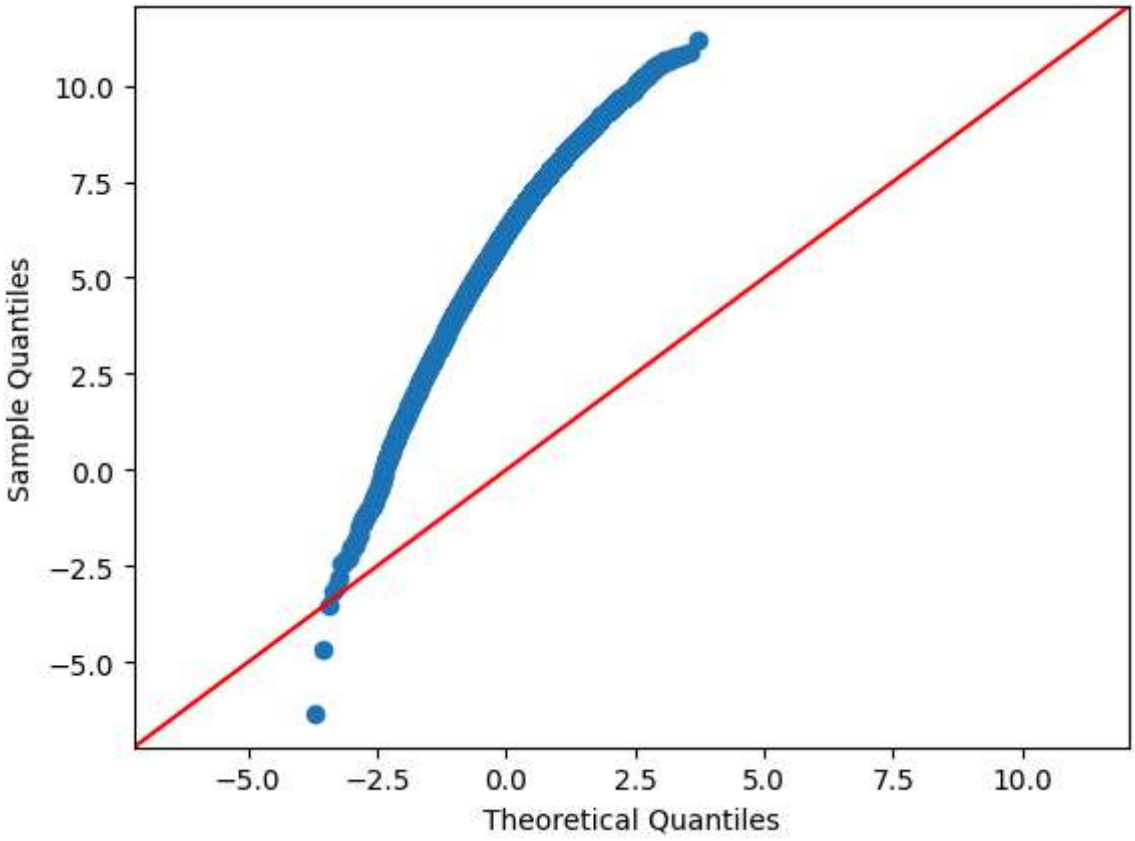
In [ ]:
```
from sklearn.preprocessing import QuantileTransformer
qt=QuantileTransformer(output_distribution='normal')
df["Moderate Negative Skew_1"]=qt.fit_transform(df[["Moderate Negative Skew"]]
df
```

Out[25]:

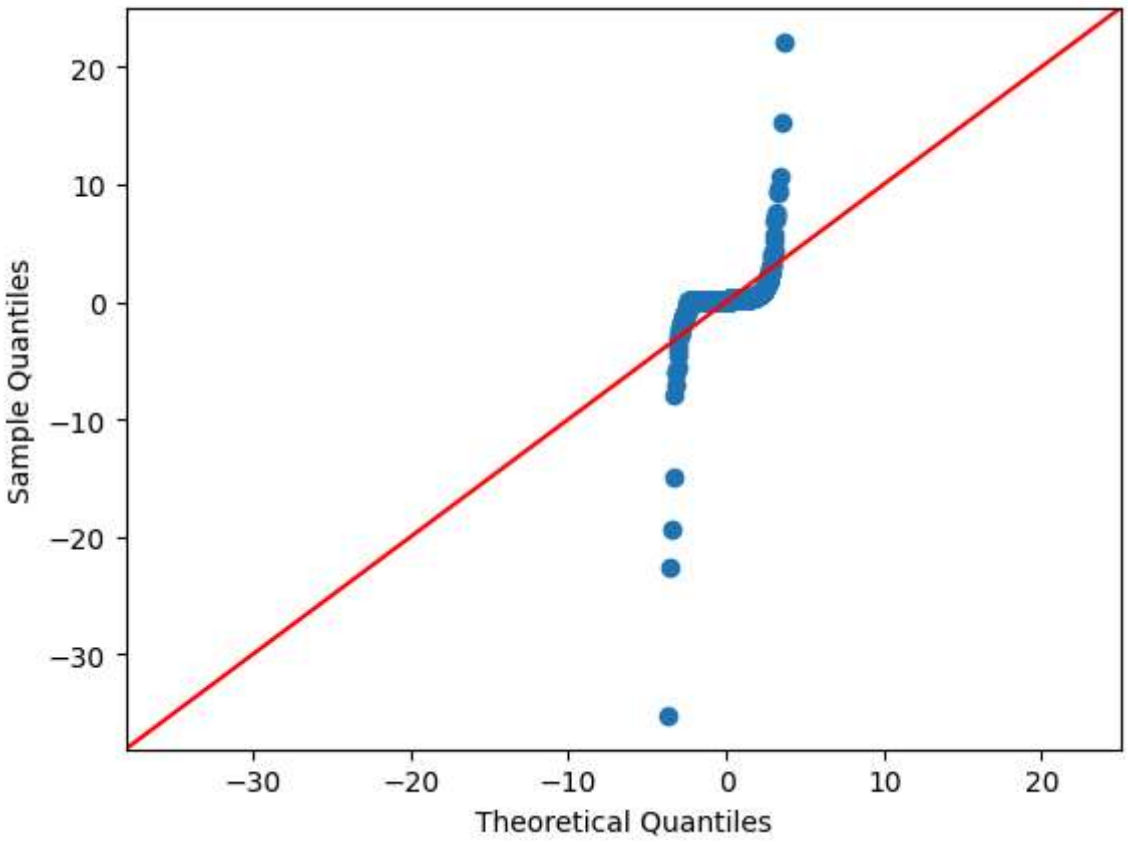
| | Moderate Positive Skew | Highly Positive Skew | Moderate Negative Skew | Highly Negative Skew | Highly Positive Skew_boxcox | Moderate Negative Skew_yeojohnson | Highly Neg Skew_yeojoh |
|---|---|---|---|---|---|---|---|
| **0** | 0.899990 | 2.895074 | 11.180748 | 9.027485 | 0.812909 | 29.137807 | 51.08 |
| **1** | 1.113554 | 2.962385 | 10.842938 | 9.009762 | 0.825921 | 27.885274 | 50.89 |
| **2** | 1.156830 | 2.966378 | 10.817934 | 9.006134 | 0.826679 | 27.793303 | 50.86 |
| **3** | 1.264131 | 3.000324 | 10.764570 | 9.000125 | 0.833058 | 27.597362 | 50.79 |
| **4** | 1.323914 | 3.012109 | 10.753117 | 8.981296 | 0.835247 | 27.555370 | 50.60 |
| **...** | ... | ... | ... | ... | ... | ... | |
| **9995** | 14.749050 | 16.289513 | -2.980821 | -3.254882 | 1.457701 | -1.949345 | -1.43 |
| **9996** | 14.854474 | 16.396252 | -3.147526 | -3.772332 | 1.459189 | -2.028952 | -1.54 |
| **9997** | 15.262103 | 17.102991 | -3.517256 | -4.717950 | 1.468681 | -2.199693 | -1.72 |
| **9998** | 15.269983 | 17.628467 | -4.689833 | -5.670496 | 1.475357 | -2.697151 | -1.87 |
| **9999** | 16.204517 | 18.052331 | -6.335679 | -7.036091 | 1.480525 | -3.311401 | -2.05 |

10000 rows × 8 columns

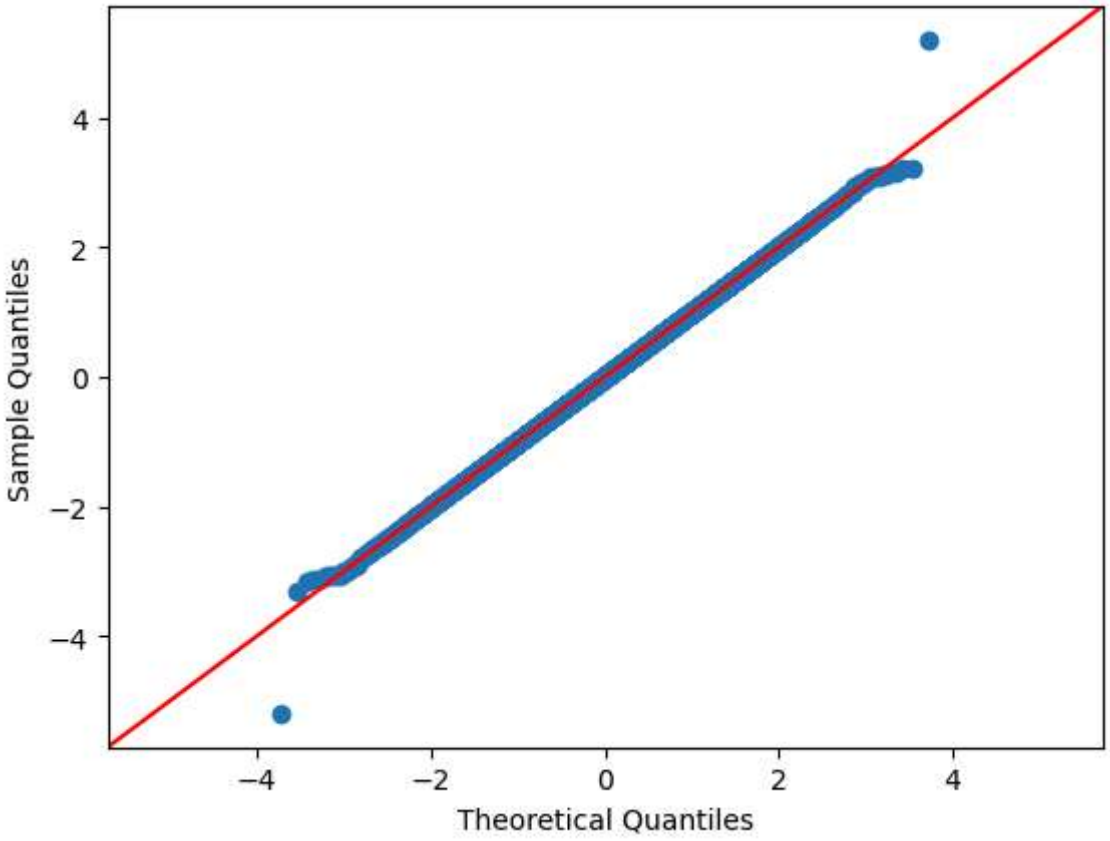
In [ ]:
```
import seaborn as sns
import statsmodels.api as sm
import matplotlib.pyplot as plt
sm.qqplot(df["Moderate Negative Skew"],line="45")
plt.show()
```



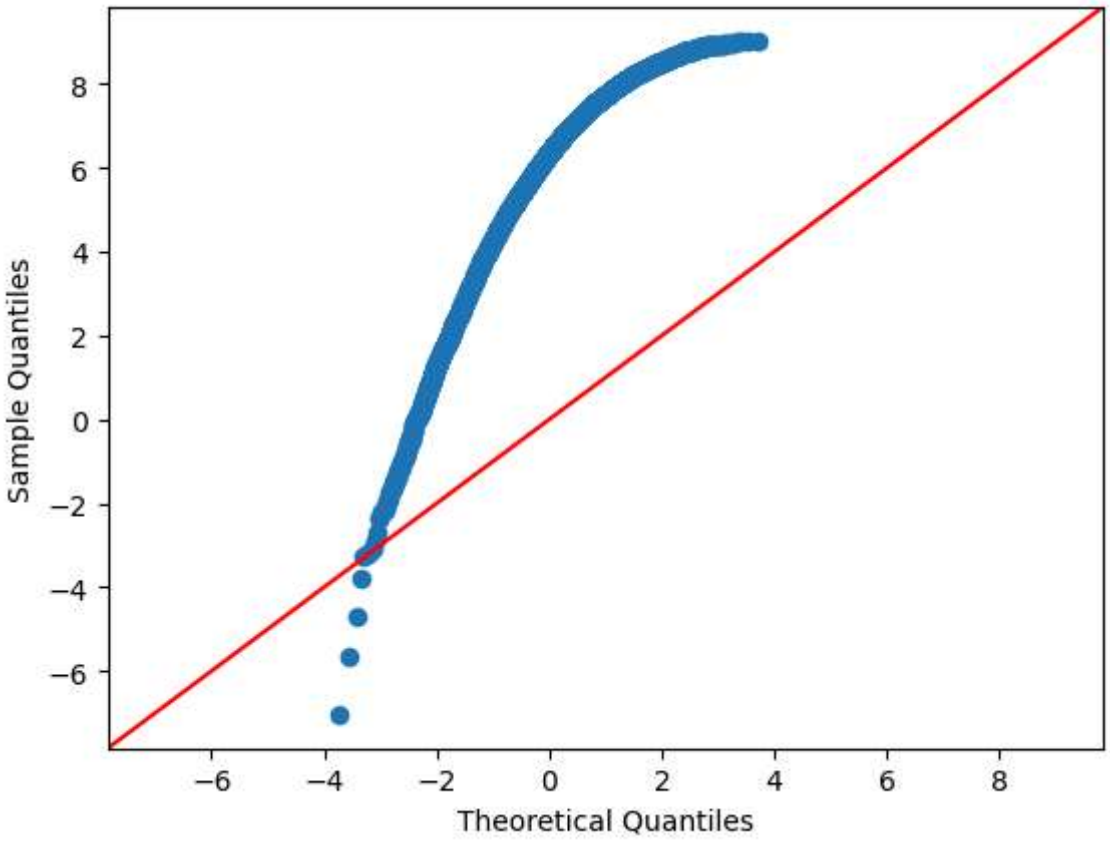
In [15]:
```
import pandas as pd
from scipy import stats
import numpy as np
df=pd.read_csv("Data_to_Transform.csv")
sm.qqplot(np.reciprocal(df["Moderate Negative Skew"]),line="45")
plt.show()
```



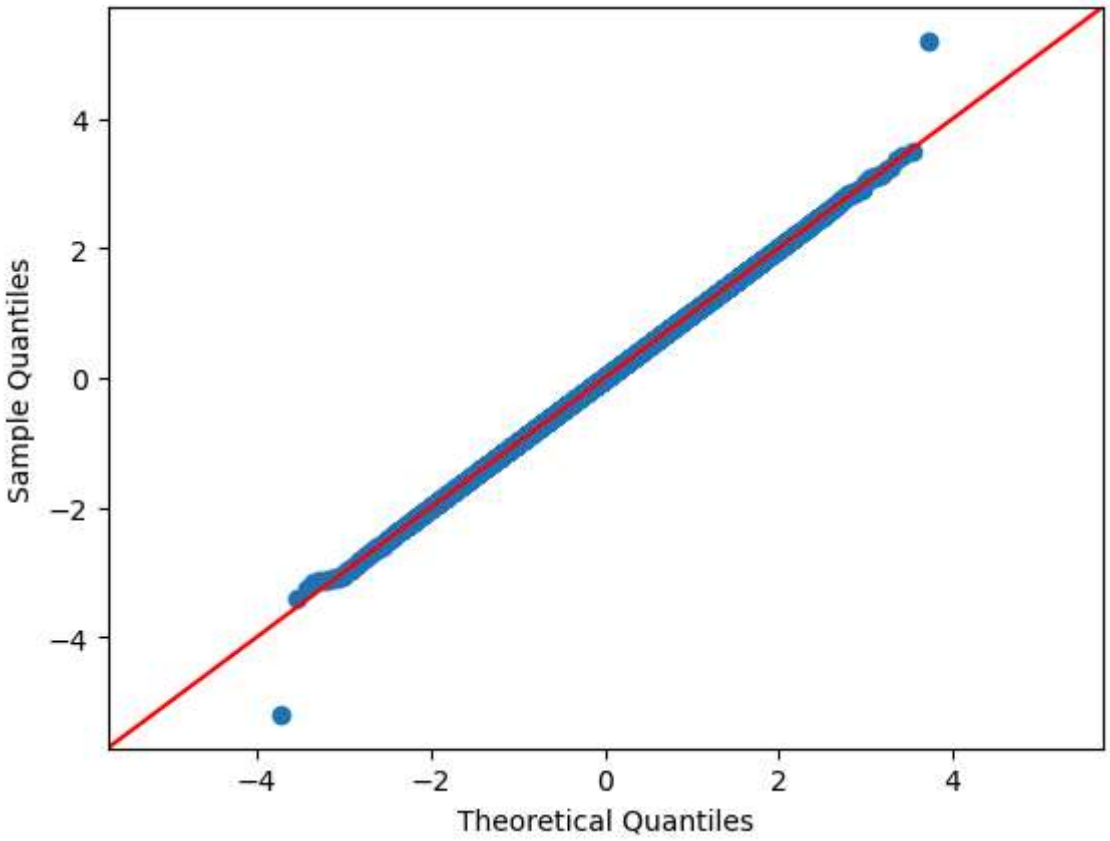
In [17]:
```
from sklearn.preprocessing import QuantileTransformer
qt=QuantileTransformer(output_distribution='normal',n_quantiles=891)
df["Moderate Negative Skew_2"]=qt.fit_transform(df[["Moderate Negative Skew"]]
sm.qqplot(df["Moderate Negative Skew_2"],line="45")
plt.show()
```



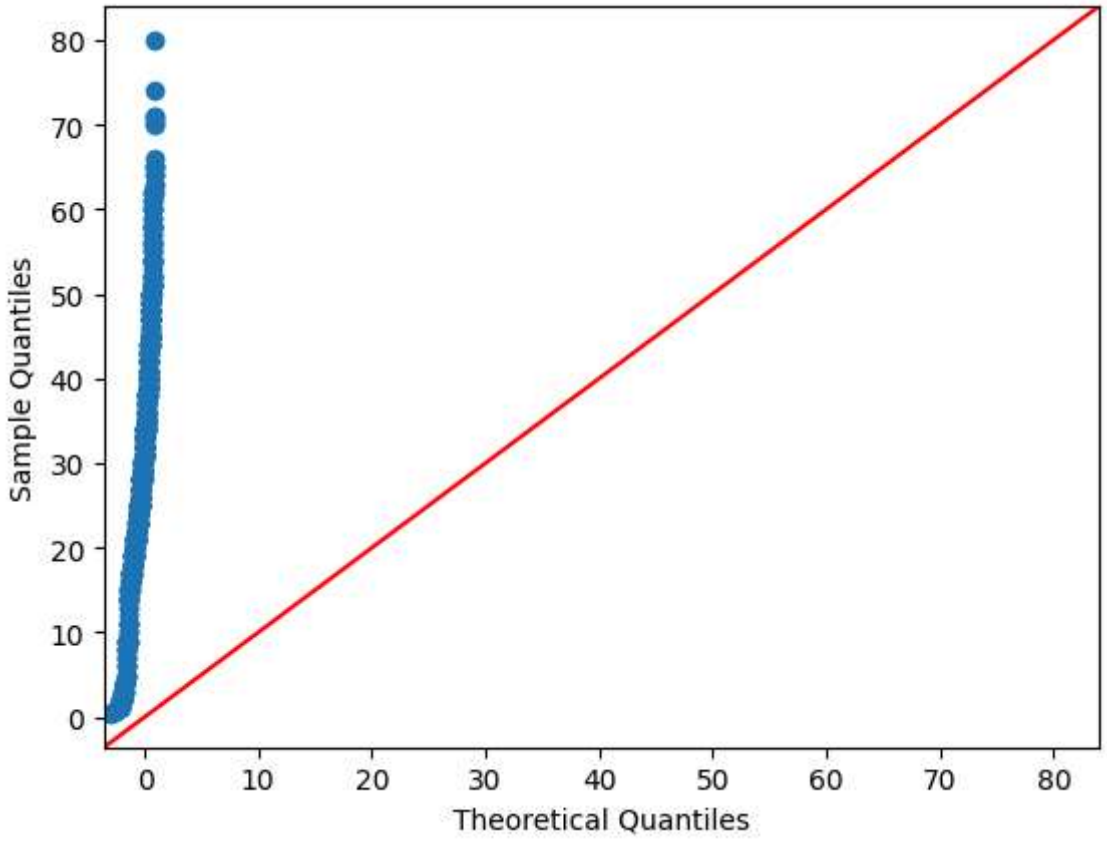
In [18]:
```
df["Highly Negative Skew_1"]=qt.fit_transform(df[["Highly Negative Skew"]])
sm.qqplot(df["Highly Negative Skew"],line="45")
plt.show()
```



In [19]:
```
sm.qqplot(df["Highly Negative Skew_1"],line="45")
plt.show()
```



In [20]:
```
dt=pd.read_csv("titanic_dataset.csv")
from sklearn.preprocessing import QuantileTransformer
qt=QuantileTransformer(output_distribution='normal',n_quantiles=891)
dt["Age_1"]=qt.fit_transform(dt[["Age"]])
sm.qqplot(dt["Age"],line="45")
plt.show()
```



In [21]:
```
sm.qqplot(dt['Age_1'],line="45")
plt.show()
```