In [1]:
```
# Importing the Necessary Libraries for our Task

import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
```

In [2]:
```
# Reading our data from the Link
url = "https://raw.githubusercontent.com/AdiPersonalWorks/Random/master/student_scores%20-
df = pd.read_csv(url)
```

In [3]:
```
# Checking the Head of the data
df.head()
```

Out[3]:

	Hours	Scores
0	2.5	21
1	5.1	47
2	3.2	27
3	8.5	75
4	3.5	30

In [4]:
```
# Checking the info of the data
df.info()
```

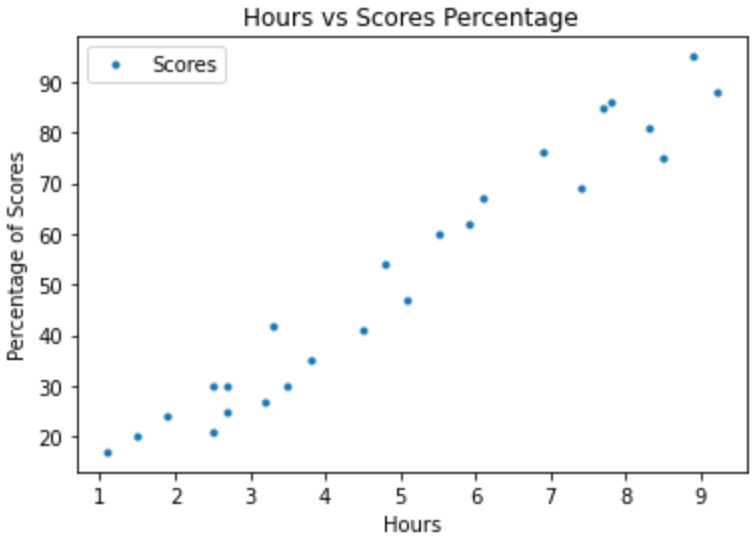
```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 25 entries, 0 to 24
Data columns (total 2 columns):
 #   Column  Non-Null Count  Dtype  
---  ------  --------------  -----  
 0   Hours   25 non-null     float64
 1   Scores  25 non-null     int64  
dtypes: float64(1), int64(1)
memory usage: 528.0 bytes
```

In [5]:
```
# Checking for null values
df.isnull().sum()
```

Out[5]:
```
Hours     0
Scores    0
dtype: int64
```

In [6]:
```
# Dropping the duplicate rows from the data
df.drop_duplicates(inplace=True)
```

In [7]:
```
# Plotting our data
df.plot(x="Hours",y="Scores",style='.')
plt.title("Hours vs Scores Percentage")
plt.xlabel("Hours")
plt.ylabel("Percentage of Scores")
plt.show()
```



As we can see theres a positive correlation between the number of hours and the percentage of scores and it can be clearly seperated by a regression line .

In [8]:
```
# Feature Splitting for Training and testing the data
X = df.iloc[:,:-1].values
y = df.iloc[:,-1].values
```

In [9]:
```
# Importing our train_test_split model for training and testing the data
from sklearn.model_selection import train_test_split
```

In [10]:
```
# Since its a very small dataset we will be taking half the data for testing
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.5, random_state=0)
```

In [11]:
```
# Importing our Algorithms to perform the regression task
```

In [12]:
```
from sklearn.linear_model import LinearRegression
from xgboost import XGBRegressor
from catboost import CatBoostRegressor
from sklearn.tree import DecisionTreeRegressor
from sklearn.ensemble import RandomForestRegressor
```

In [13]:
```
Linear_regression = LinearRegression()
xgboost = XGBRegressor()
catboost = CatBoostRegressor()
rfr = RandomForestRegressor(n_estimators=200)
dtr = DecisionTreeRegressor()
```

In [14]:
```
from sklearn.metrics import mean_squared_error as mse , mean_absolute_error as mae
```

We will be creating a function which can perform all the regression tasks for each and every Algorithm so we dont need to create a new train test split model for every single algorithm

In [15]:
```
def model(model):
    model.fit(X_train,y_train)
    y_pred = model.predict(X_test)
    # Comparing Actual vs Predicted
```

```
    df = pd.DataFrame({'Actual': y_test, 'Predicted': y_pred})
    print(df)
    # You can also test with your own data
    hours = 9.25
    own_pred = model.predict([[hours]])
    print("No of Hours = {}".format(hours))
    print("Predicted Score = {}".format(own_pred[0]))
    # Evaluating the performance of the model
    print('Mean Squared Error:',mse(y_test, y_pred))
    print('Mean Absolute Error:',mae(y_test, y_pred))
```

In [16]:
```
model(Linear_regression)
```

```
    Actual  Predicted
0       20  14.973540
1       27  31.811747
2       69  73.412023
3       30  24.878368
4       62  58.554782
5       35  37.754644
6       24  18.935471
7       86  77.373954
8       76  68.459609
9       17  11.011609
10      47  50.630920
11      85  76.383471
12      42  32.802230
No of Hours = 9.25
Predicted Score = 91.73595402298852
Mean Squared Error: 36.798186194985504
Mean Absolute Error: 5.710484526967277
```

In [17]:
```
model(xgboost)
```

```
    Actual  Predicted
0       20  21.001032
1       27  30.001406
2       69  80.998802
3       30  21.001032
4       62  67.000038
5       35  30.001406
6       24  21.001032
7       86  80.998802
8       76  67.000038
9       17  21.001032
10      47  54.001846
11      85  80.998802
12      42  30.001406
No of Hours = 9.25
Predicted Score = 88.00041961669922
Mean Squared Error: 48.07419753242748
Mean Absolute Error: 6.077049108651968
```

In [18]:
```
model(catboost)
```

```
Learning rate set to 0.020356
0:      learn: 24.6607905       total: 134ms    remaining: 2m 13s
1:      learn: 24.4463653       total: 134ms    remaining: 1m 6s
2:      learn: 24.2009456       total: 134ms    remaining: 44.6s
3:      learn: 24.0016796       total: 135ms    remaining: 33.5s
4:      learn: 23.8068473       total: 135ms    remaining: 26.8s
5:      learn: 23.5824967       total: 135ms    remaining: 22.4s
6:      learn: 23.3686162       total: 135ms    remaining: 19.2s
```

```
7:      learn: 23.1148274       total: 135ms    remaining: 16.8s
8:      learn: 22.8822469       total: 136ms    remaining: 14.9s
9:      learn: 22.6933042       total: 136ms    remaining: 13.4s
10:     learn: 22.4994553       total: 136ms    remaining: 12.2s
11:     learn: 22.2995639       total: 136ms    remaining: 11.2s
12:     learn: 22.0635902       total: 136ms    remaining: 10.4s
13:     learn: 21.8493891       total: 137ms    remaining: 9.62s
14:     learn: 21.6486162       total: 137ms    remaining: 8.98s
15:     learn: 21.4026057       total: 137ms    remaining: 8.43s
16:     learn: 21.1987149       total: 137ms    remaining: 7.93s
17:     learn: 21.0109315       total: 137ms    remaining: 7.5s
18:     learn: 20.7871340       total: 138ms    remaining: 7.1s
19:     learn: 20.5725100       total: 138ms    remaining: 6.75s
20:     learn: 20.4081244       total: 138ms    remaining: 6.43s
21:     learn: 20.2639059       total: 138ms    remaining: 6.14s
22:     learn: 20.1247671       total: 139ms    remaining: 5.89s
23:     learn: 19.9589418       total: 139ms    remaining: 5.65s
24:     learn: 19.8067029       total: 139ms    remaining: 5.43s
25:     learn: 19.6375417       total: 139ms    remaining: 5.22s
26:     learn: 19.4620313       total: 140ms    remaining: 5.03s
27:     learn: 19.2866036       total: 140ms    remaining: 4.85s
28:     learn: 19.1028585       total: 140ms    remaining: 4.69s
29:     learn: 18.9616794       total: 140ms    remaining: 4.53s
30:     learn: 18.7789836       total: 140ms    remaining: 4.39s
31:     learn: 18.6128955       total: 141ms    remaining: 4.25s
32:     learn: 18.4378128       total: 141ms    remaining: 4.13s
33:     learn: 18.2675947       total: 141ms    remaining: 4s
34:     learn: 18.1158343       total: 141ms    remaining: 3.89s
35:     learn: 17.9352824       total: 141ms    remaining: 3.78s
36:     learn: 17.7852174       total: 142ms    remaining: 3.68s
37:     learn: 17.6323784       total: 142ms    remaining: 3.59s
38:     learn: 17.4420491       total: 142ms    remaining: 3.5s
39:     learn: 17.3013614       total: 142ms    remaining: 3.41s
40:     learn: 17.1620421       total: 142ms    remaining: 3.33s
41:     learn: 16.9912917       total: 143ms    remaining: 3.25s
42:     learn: 16.8746420       total: 143ms    remaining: 3.18s
43:     learn: 16.7315461       total: 143ms    remaining: 3.11s
44:     learn: 16.5767341       total: 143ms    remaining: 3.04s
45:     learn: 16.4193382       total: 143ms    remaining: 2.97s
46:     learn: 16.3075103       total: 144ms    remaining: 2.91s
47:     learn: 16.1602501       total: 144ms    remaining: 2.85s
48:     learn: 16.0299383       total: 144ms    remaining: 2.79s
49:     learn: 15.8810440       total: 144ms    remaining: 2.74s
50:     learn: 15.7475299       total: 144ms    remaining: 2.69s
51:     learn: 15.6042264       total: 145ms    remaining: 2.63s
52:     learn: 15.4717378       total: 145ms    remaining: 2.59s
53:     learn: 15.3034106       total: 145ms    remaining: 2.54s
54:     learn: 15.1894067       total: 145ms    remaining: 2.49s
55:     learn: 15.0297672       total: 145ms    remaining: 2.45s
56:     learn: 14.8890755       total: 146ms    remaining: 2.41s
57:     learn: 14.7657447       total: 146ms    remaining: 2.37s
58:     learn: 14.6222778       total: 146ms    remaining: 2.33s
59:     learn: 14.4861061       total: 146ms    remaining: 2.29s
60:     learn: 14.3645987       total: 146ms    remaining: 2.25s
61:     learn: 14.2110984       total: 147ms    remaining: 2.22s
62:     learn: 14.0694413       total: 147ms    remaining: 2.18s
63:     learn: 13.9497896       total: 147ms    remaining: 2.15s
64:     learn: 13.8348037       total: 147ms    remaining: 2.12s
65:     learn: 13.7182295       total: 147ms    remaining: 2.08s
66:     learn: 13.6284689       total: 148ms    remaining: 2.06s
67:     learn: 13.4994276       total: 148ms    remaining: 2.02s
68:     learn: 13.4016483       total: 148ms    remaining: 2s
69:     learn: 13.2977040       total: 148ms    remaining: 1.97s
70:     learn: 13.1897201       total: 148ms    remaining: 1.94s
71:     learn: 13.0736261       total: 149ms    remaining: 1.92s
72:     learn: 12.9549754       total: 149ms    remaining: 1.89s
```

```
73:     learn: 12.8376458       total: 149ms    remaining: 1.86s
74:     learn: 12.7405664       total: 149ms    remaining: 1.84s
75:     learn: 12.6395013       total: 149ms    remaining: 1.81s
76:     learn: 12.5387505       total: 150ms    remaining: 1.79s
77:     learn: 12.4500501       total: 150ms    remaining: 1.77s
78:     learn: 12.3374599       total: 150ms    remaining: 1.75s
79:     learn: 12.2455925       total: 150ms    remaining: 1.73s
80:     learn: 12.1583585       total: 150ms    remaining: 1.71s
81:     learn: 12.0799374       total: 151ms    remaining: 1.69s
82:     learn: 11.9692313       total: 151ms    remaining: 1.67s
83:     learn: 11.8587660       total: 151ms    remaining: 1.65s
84:     learn: 11.7738681       total: 151ms    remaining: 1.63s
85:     learn: 11.6873573       total: 151ms    remaining: 1.61s
86:     learn: 11.5927152       total: 152ms    remaining: 1.59s
87:     learn: 11.4977006       total: 152ms    remaining: 1.57s
88:     learn: 11.3907044       total: 152ms    remaining: 1.55s
89:     learn: 11.3131912       total: 152ms    remaining: 1.54s
90:     learn: 11.2379923       total: 152ms    remaining: 1.52s
91:     learn: 11.1480182       total: 153ms    remaining: 1.5s
92:     learn: 11.0573240       total: 153ms    remaining: 1.49s
93:     learn: 10.9592089       total: 153ms    remaining: 1.47s
94:     learn: 10.8498724       total: 153ms    remaining: 1.46s
95:     learn: 10.7558818       total: 153ms    remaining: 1.44s
96:     learn: 10.6600841       total: 154ms    remaining: 1.43s
97:     learn: 10.5793758       total: 154ms    remaining: 1.42s
98:     learn: 10.5079605       total: 154ms    remaining: 1.4s
99:     learn: 10.4358144       total: 154ms    remaining: 1.39s
100:    learn: 10.3436657       total: 154ms    remaining: 1.37s
101:    learn: 10.2861343       total: 155ms    remaining: 1.36s
102:    learn: 10.1841890       total: 155ms    remaining: 1.35s
103:    learn: 10.1077251       total: 155ms    remaining: 1.33s
104:    learn: 10.0331284       total: 155ms    remaining: 1.32s
105:    learn: 9.9650187        total: 155ms    remaining: 1.31s
106:    learn: 9.8894454        total: 156ms    remaining: 1.3s
107:    learn: 9.7940739        total: 156ms    remaining: 1.29s
108:    learn: 9.7315302        total: 156ms    remaining: 1.28s
109:    learn: 9.6459255        total: 156ms    remaining: 1.26s
110:    learn: 9.5658316        total: 157ms    remaining: 1.25s
111:    learn: 9.4923977        total: 157ms    remaining: 1.24s
112:    learn: 9.4345188        total: 157ms    remaining: 1.23s
113:    learn: 9.3531546        total: 157ms    remaining: 1.22s
114:    learn: 9.2858792        total: 158ms    remaining: 1.21s
115:    learn: 9.2059510        total: 158ms    remaining: 1.2s
116:    learn: 9.1325549        total: 158ms    remaining: 1.19s
117:    learn: 9.0789651        total: 158ms    remaining: 1.18s
118:    learn: 9.0096995        total: 158ms    remaining: 1.17s
119:    learn: 8.9589204        total: 159ms    remaining: 1.16s
120:    learn: 8.8937689        total: 159ms    remaining: 1.15s
121:    learn: 8.8221319        total: 159ms    remaining: 1.14s
122:    learn: 8.7388076        total: 159ms    remaining: 1.13s
123:    learn: 8.6868429        total: 159ms    remaining: 1.13s
124:    learn: 8.6209906        total: 159ms    remaining: 1.12s
125:    learn: 8.5543972        total: 160ms    remaining: 1.11s
126:    learn: 8.4947241        total: 160ms    remaining: 1.1s
127:    learn: 8.4316508        total: 160ms    remaining: 1.09s
128:    learn: 8.3748586        total: 160ms    remaining: 1.08s
129:    learn: 8.3097445        total: 161ms    remaining: 1.08s
130:    learn: 8.2450910        total: 161ms    remaining: 1.07s
131:    learn: 8.1872379        total: 161ms    remaining: 1.06s
132:    learn: 8.1249446        total: 161ms    remaining: 1.05s
133:    learn: 8.0746683        total: 162ms    remaining: 1.04s
134:    learn: 8.0171507        total: 162ms    remaining: 1.04s
135:    learn: 7.9574181        total: 162ms    remaining: 1.03s
136:    learn: 7.9020871        total: 162ms    remaining: 1.02s
137:    learn: 7.8465896        total: 163ms    remaining: 1.01s
138:    learn: 7.7819428        total: 163ms    remaining: 1.01s
```

```
139:    learn: 7.7239725        total: 163ms    remaining: 1s
140:    learn: 7.6731509        total: 163ms    remaining: 994ms
141:    learn: 7.6066135        total: 163ms    remaining: 987ms
142:    learn: 7.5550246        total: 164ms    remaining: 980ms
143:    learn: 7.4969029        total: 164ms    remaining: 973ms
144:    learn: 7.4416160        total: 164ms    remaining: 967ms
145:    learn: 7.3816525        total: 164ms    remaining: 960ms
146:    learn: 7.3300957        total: 164ms    remaining: 954ms
147:    learn: 7.2823882        total: 165ms    remaining: 947ms
148:    learn: 7.2187779        total: 165ms    remaining: 941ms
149:    learn: 7.1612736        total: 165ms    remaining: 934ms
150:    learn: 7.1118302        total: 165ms    remaining: 928ms
151:    learn: 7.0556933        total: 165ms    remaining: 922ms
152:    learn: 7.0166164        total: 165ms    remaining: 916ms
153:    learn: 6.9627848        total: 166ms    remaining: 910ms
154:    learn: 6.9035707        total: 166ms    remaining: 904ms
155:    learn: 6.8450704        total: 166ms    remaining: 898ms
156:    learn: 6.7980910        total: 166ms    remaining: 892ms
157:    learn: 6.7499898        total: 166ms    remaining: 887ms
158:    learn: 6.7124551        total: 167ms    remaining: 881ms
159:    learn: 6.6710331        total: 167ms    remaining: 876ms
160:    learn: 6.6237748        total: 167ms    remaining: 871ms
161:    learn: 6.5710595        total: 167ms    remaining: 865ms
162:    learn: 6.5250846        total: 168ms    remaining: 860ms
163:    learn: 6.4794935        total: 168ms    remaining: 855ms
164:    learn: 6.4341409        total: 168ms    remaining: 850ms
165:    learn: 6.3912846        total: 168ms    remaining: 844ms
166:    learn: 6.3392466        total: 168ms    remaining: 839ms
167:    learn: 6.2954473        total: 169ms    remaining: 835ms
168:    learn: 6.2483241        total: 169ms    remaining: 830ms
169:    learn: 6.1981039        total: 169ms    remaining: 827ms
170:    learn: 6.1521859        total: 170ms    remaining: 822ms
171:    learn: 6.1110400        total: 170ms    remaining: 817ms
172:    learn: 6.0740636        total: 170ms    remaining: 812ms
173:    learn: 6.0336830        total: 170ms    remaining: 808ms
174:    learn: 5.9926484        total: 170ms    remaining: 803ms
175:    learn: 5.9543272        total: 171ms    remaining: 799ms
176:    learn: 5.9113597        total: 171ms    remaining: 794ms
177:    learn: 5.8728730        total: 171ms    remaining: 790ms
178:    learn: 5.8305087        total: 171ms    remaining: 785ms
179:    learn: 5.7925475        total: 171ms    remaining: 781ms
180:    learn: 5.7568123        total: 172ms    remaining: 776ms
181:    learn: 5.7220393        total: 172ms    remaining: 772ms
182:    learn: 5.6846349        total: 172ms    remaining: 768ms
183:    learn: 5.6485884        total: 172ms    remaining: 764ms
184:    learn: 5.6129904        total: 172ms    remaining: 760ms
185:    learn: 5.5787923        total: 173ms    remaining: 756ms
186:    learn: 5.5434573        total: 173ms    remaining: 752ms
187:    learn: 5.5157340        total: 173ms    remaining: 748ms
188:    learn: 5.4880348        total: 173ms    remaining: 744ms
189:    learn: 5.4620776        total: 174ms    remaining: 740ms
190:    learn: 5.4259777        total: 174ms    remaining: 736ms
191:    learn: 5.3932880        total: 174ms    remaining: 732ms
192:    learn: 5.3590827        total: 174ms    remaining: 728ms
193:    learn: 5.3271967        total: 174ms    remaining: 725ms
194:    learn: 5.2970217        total: 175ms    remaining: 721ms
195:    learn: 5.2590205        total: 175ms    remaining: 717ms
196:    learn: 5.2207397        total: 175ms    remaining: 713ms
197:    learn: 5.1901696        total: 175ms    remaining: 710ms
198:    learn: 5.1594961        total: 175ms    remaining: 706ms
199:    learn: 5.1278176        total: 176ms    remaining: 703ms
200:    learn: 5.0992568        total: 176ms    remaining: 699ms
201:    learn: 5.0635639        total: 176ms    remaining: 696ms
202:    learn: 5.0277735        total: 176ms    remaining: 692ms
203:    learn: 5.0000216        total: 177ms    remaining: 689ms
204:    learn: 4.9682896        total: 177ms    remaining: 685ms
```

```
205:    learn: 4.9376812        total: 177ms    remaining: 682ms
206:    learn: 4.9036715        total: 177ms    remaining: 678ms
207:    learn: 4.8699591        total: 177ms    remaining: 675ms
208:    learn: 4.8368023        total: 177ms    remaining: 672ms
209:    learn: 4.8131441        total: 178ms    remaining: 669ms
210:    learn: 4.7838736        total: 178ms    remaining: 665ms
211:    learn: 4.7555182        total: 178ms    remaining: 662ms
212:    learn: 4.7259384        total: 178ms    remaining: 659ms
213:    learn: 4.6972750        total: 179ms    remaining: 656ms
214:    learn: 4.6710610        total: 179ms    remaining: 653ms
215:    learn: 4.6449380        total: 179ms    remaining: 649ms
216:    learn: 4.6180741        total: 179ms    remaining: 647ms
217:    learn: 4.5921860        total: 179ms    remaining: 644ms
218:    learn: 4.5683342        total: 180ms    remaining: 643ms
219:    learn: 4.5410261        total: 181ms    remaining: 641ms
220:    learn: 4.5143649        total: 181ms    remaining: 638ms
221:    learn: 4.4871080        total: 181ms    remaining: 635ms
222:    learn: 4.4635151        total: 182ms    remaining: 632ms
223:    learn: 4.4410359        total: 182ms    remaining: 630ms
224:    learn: 4.4178300        total: 182ms    remaining: 627ms
225:    learn: 4.3952736        total: 182ms    remaining: 624ms
226:    learn: 4.3674896        total: 182ms    remaining: 621ms
227:    learn: 4.3416759        total: 183ms    remaining: 619ms
228:    learn: 4.3219582        total: 183ms    remaining: 616ms
229:    learn: 4.2950574        total: 183ms    remaining: 613ms
230:    learn: 4.2708884        total: 183ms    remaining: 610ms
231:    learn: 4.2496211        total: 184ms    remaining: 608ms
232:    learn: 4.2259481        total: 184ms    remaining: 605ms
233:    learn: 4.2020048        total: 184ms    remaining: 602ms
234:    learn: 4.1814264        total: 184ms    remaining: 599ms
235:    learn: 4.1574970        total: 184ms    remaining: 597ms
236:    learn: 4.1336531        total: 185ms    remaining: 594ms
237:    learn: 4.1132441        total: 185ms    remaining: 592ms
238:    learn: 4.0918927        total: 185ms    remaining: 589ms
239:    learn: 4.0686971        total: 185ms    remaining: 586ms
240:    learn: 4.0518416        total: 185ms    remaining: 584ms
241:    learn: 4.0348539        total: 186ms    remaining: 582ms
242:    learn: 4.0147501        total: 186ms    remaining: 579ms
243:    learn: 3.9947810        total: 186ms    remaining: 577ms
244:    learn: 3.9752166        total: 186ms    remaining: 574ms
245:    learn: 3.9555024        total: 187ms    remaining: 572ms
246:    learn: 3.9383650        total: 187ms    remaining: 569ms
247:    learn: 3.9191498        total: 187ms    remaining: 567ms
248:    learn: 3.9012183        total: 187ms    remaining: 565ms
249:    learn: 3.8819925        total: 187ms    remaining: 562ms
250:    learn: 3.8609398        total: 188ms    remaining: 560ms
251:    learn: 3.8419751        total: 188ms    remaining: 558ms
252:    learn: 3.8233542        total: 188ms    remaining: 556ms
253:    learn: 3.8021058        total: 188ms    remaining: 554ms
254:    learn: 3.7808170        total: 189ms    remaining: 551ms
255:    learn: 3.7625723        total: 189ms    remaining: 549ms
256:    learn: 3.7442280        total: 189ms    remaining: 547ms
257:    learn: 3.7271066        total: 190ms    remaining: 545ms
258:    learn: 3.7098517        total: 190ms    remaining: 543ms
259:    learn: 3.6918363        total: 190ms    remaining: 541ms
260:    learn: 3.6739402        total: 190ms    remaining: 539ms
261:    learn: 3.6591347        total: 191ms    remaining: 537ms
262:    learn: 3.6414437        total: 191ms    remaining: 535ms
263:    learn: 3.6238697        total: 192ms    remaining: 534ms
264:    learn: 3.6072254        total: 192ms    remaining: 533ms
265:    learn: 3.5900321        total: 193ms    remaining: 531ms
266:    learn: 3.5727830        total: 193ms    remaining: 529ms
267:    learn: 3.5558035        total: 193ms    remaining: 527ms
268:    learn: 3.5387732        total: 193ms    remaining: 525ms
269:    learn: 3.5218553        total: 194ms    remaining: 523ms
270:    learn: 3.5033540        total: 194ms    remaining: 521ms
```

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271:    learn: 3.4874043        total: 194ms    remaining: 519ms
272:    learn: 3.4717243        total: 194ms    remaining: 517ms
273:    learn: 3.4553556        total: 194ms    remaining: 515ms
274:    learn: 3.4395038        total: 195ms    remaining: 513ms
275:    learn: 3.4276139        total: 195ms    remaining: 511ms
276:    learn: 3.4115108        total: 195ms    remaining: 509ms
277:    learn: 3.3959252        total: 195ms    remaining: 507ms
278:    learn: 3.3800186        total: 196ms    remaining: 505ms
279:    learn: 3.3640882        total: 196ms    remaining: 503ms
280:    learn: 3.3483799        total: 196ms    remaining: 502ms
281:    learn: 3.3331801        total: 196ms    remaining: 500ms
282:    learn: 3.3176637        total: 196ms    remaining: 498ms
283:    learn: 3.3021283        total: 197ms    remaining: 496ms
284:    learn: 3.2868055        total: 197ms    remaining: 494ms
285:    learn: 3.2715796        total: 197ms    remaining: 492ms
286:    learn: 3.2564500        total: 197ms    remaining: 490ms
287:    learn: 3.2413002        total: 198ms    remaining: 489ms
288:    learn: 3.2270164        total: 198ms    remaining: 487ms
289:    learn: 3.2128210        total: 198ms    remaining: 485ms
290:    learn: 3.1980453        total: 198ms    remaining: 483ms
291:    learn: 3.1833632        total: 199ms    remaining: 481ms
292:    learn: 3.1687742        total: 199ms    remaining: 480ms
293:    learn: 3.1541660        total: 199ms    remaining: 478ms
294:    learn: 3.1397597        total: 199ms    remaining: 476ms
295:    learn: 3.1254449        total: 199ms    remaining: 474ms
296:    learn: 3.1112209        total: 200ms    remaining: 472ms
297:    learn: 3.0970872        total: 200ms    remaining: 471ms
298:    learn: 3.0829310        total: 200ms    remaining: 469ms
299:    learn: 3.0693341        total: 200ms    remaining: 467ms
300:    learn: 3.0554611        total: 200ms    remaining: 466ms
301:    learn: 3.0416763        total: 201ms    remaining: 464ms
302:    learn: 3.0279792        total: 201ms    remaining: 462ms
303:    learn: 3.0148328        total: 201ms    remaining: 461ms
304:    learn: 3.0018425        total: 201ms    remaining: 459ms
305:    learn: 2.9883870        total: 202ms    remaining: 457ms
306:    learn: 2.9750174        total: 202ms    remaining: 456ms
307:    learn: 2.9617330        total: 202ms    remaining: 454ms
308:    learn: 2.9485334        total: 202ms    remaining: 452ms
309:    learn: 2.9354181        total: 202ms    remaining: 451ms
310:    learn: 2.9223866        total: 203ms    remaining: 449ms
311:    learn: 2.9094383        total: 203ms    remaining: 447ms
312:    learn: 2.8969975        total: 203ms    remaining: 446ms
313:    learn: 2.8842073        total: 203ms    remaining: 444ms
314:    learn: 2.8714990        total: 204ms    remaining: 443ms
315:    learn: 2.8588722        total: 204ms    remaining: 441ms
316:    learn: 2.8467722        total: 204ms    remaining: 440ms
317:    learn: 2.8342968        total: 204ms    remaining: 438ms
318:    learn: 2.8219015        total: 204ms    remaining: 436ms
319:    learn: 2.8095858        total: 205ms    remaining: 435ms
320:    learn: 2.7973492        total: 205ms    remaining: 433ms
321:    learn: 2.7851913        total: 205ms    remaining: 432ms
322:    learn: 2.7731116        total: 205ms    remaining: 430ms
323:    learn: 2.7614859        total: 206ms    remaining: 429ms
324:    learn: 2.7495550        total: 206ms    remaining: 427ms
325:    learn: 2.7375763        total: 206ms    remaining: 426ms
326:    learn: 2.7257978        total: 206ms    remaining: 424ms
327:    learn: 2.7140953        total: 206ms    remaining: 423ms
328:    learn: 2.7024684        total: 207ms    remaining: 422ms
329:    learn: 2.6912923        total: 207ms    remaining: 420ms
330:    learn: 2.6801633        total: 207ms    remaining: 419ms
331:    learn: 2.6687460        total: 207ms    remaining: 417ms
332:    learn: 2.6574026        total: 208ms    remaining: 416ms
333:    learn: 2.6461329        total: 208ms    remaining: 414ms
334:    learn: 2.6349364        total: 208ms    remaining: 413ms
335:    learn: 2.6238127        total: 208ms    remaining: 412ms
336:    learn: 2.6130931        total: 208ms    remaining: 410ms
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337:    learn: 2.6021080        total: 209ms    remaining: 409ms
338:    learn: 2.5911946        total: 209ms    remaining: 407ms
339:    learn: 2.5803523        total: 209ms    remaining: 406ms
340:    learn: 2.5695807        total: 209ms    remaining: 405ms
341:    learn: 2.5587502        total: 210ms    remaining: 403ms
342:    learn: 2.5479930        total: 210ms    remaining: 402ms
343:    learn: 2.5374296        total: 210ms    remaining: 401ms
344:    learn: 2.5269353        total: 210ms    remaining: 399ms
345:    learn: 2.5168055        total: 210ms    remaining: 398ms
346:    learn: 2.5064434        total: 211ms    remaining: 397ms
347:    learn: 2.4961492        total: 211ms    remaining: 395ms
348:    learn: 2.4859227        total: 211ms    remaining: 394ms
349:    learn: 2.4757634        total: 211ms    remaining: 393ms
350:    learn: 2.4656710        total: 212ms    remaining: 391ms
351:    learn: 2.4556450        total: 212ms    remaining: 390ms
352:    learn: 2.4456851        total: 212ms    remaining: 389ms
353:    learn: 2.4357909        total: 212ms    remaining: 387ms
354:    learn: 2.4259620        total: 213ms    remaining: 386ms
355:    learn: 2.4161981        total: 213ms    remaining: 385ms
356:    learn: 2.4064988        total: 213ms    remaining: 384ms
357:    learn: 2.3968636        total: 213ms    remaining: 382ms
358:    learn: 2.3872923        total: 213ms    remaining: 381ms
359:    learn: 2.3777845        total: 214ms    remaining: 380ms
360:    learn: 2.3683398        total: 214ms    remaining: 379ms
361:    learn: 2.3589578        total: 214ms    remaining: 377ms
362:    learn: 2.3496383        total: 214ms    remaining: 376ms
363:    learn: 2.3406048        total: 215ms    remaining: 375ms
364:    learn: 2.3314052        total: 215ms    remaining: 374ms
365:    learn: 2.3222670        total: 215ms    remaining: 372ms
366:    learn: 2.3134327        total: 215ms    remaining: 371ms
367:    learn: 2.3044125        total: 215ms    remaining: 370ms
368:    learn: 2.2956344        total: 216ms    remaining: 369ms
369:    learn: 2.2867321        total: 216ms    remaining: 368ms
370:    learn: 2.2780698        total: 216ms    remaining: 366ms
371:    learn: 2.2692840        total: 216ms    remaining: 365ms
372:    learn: 2.2605574        total: 217ms    remaining: 364ms
373:    learn: 2.2521194        total: 217ms    remaining: 363ms
374:    learn: 2.2435065        total: 217ms    remaining: 362ms
375:    learn: 2.2349518        total: 217ms    remaining: 361ms
376:    learn: 2.2264549        total: 218ms    remaining: 359ms
377:    learn: 2.2180156        total: 218ms    remaining: 358ms
378:    learn: 2.2096336        total: 218ms    remaining: 357ms
379:    learn: 2.2013084        total: 218ms    remaining: 356ms
380:    learn: 2.1930398        total: 218ms    remaining: 355ms
381:    learn: 2.1848274        total: 219ms    remaining: 354ms
382:    learn: 2.1766710        total: 219ms    remaining: 353ms
383:    learn: 2.1685702        total: 219ms    remaining: 351ms
384:    learn: 2.1605247        total: 219ms    remaining: 350ms
385:    learn: 2.1525342        total: 220ms    remaining: 349ms
386:    learn: 2.1447890        total: 220ms    remaining: 348ms
387:    learn: 2.1369045        total: 220ms    remaining: 347ms
388:    learn: 2.1290740        total: 220ms    remaining: 346ms
389:    learn: 2.1212974        total: 220ms    remaining: 345ms
390:    learn: 2.1135743        total: 221ms    remaining: 344ms
391:    learn: 2.1059043        total: 221ms    remaining: 343ms
392:    learn: 2.0982873        total: 221ms    remaining: 342ms
393:    learn: 2.0907228        total: 221ms    remaining: 340ms
394:    learn: 2.0832106        total: 222ms    remaining: 339ms
395:    learn: 2.0757504        total: 222ms    remaining: 338ms
396:    learn: 2.0683419        total: 222ms    remaining: 337ms
397:    learn: 2.0609848        total: 222ms    remaining: 336ms
398:    learn: 2.0538388        total: 222ms    remaining: 335ms
399:    learn: 2.0465810        total: 223ms    remaining: 334ms
400:    learn: 2.0393738        total: 223ms    remaining: 333ms
401:    learn: 2.0322169        total: 223ms    remaining: 332ms
402:    learn: 2.0251099        total: 223ms    remaining: 331ms
```

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403:    learn: 2.0180527        total: 224ms    remaining: 330ms
404:    learn: 2.0110449        total: 224ms    remaining: 329ms
405:    learn: 2.0040863        total: 224ms    remaining: 328ms
406:    learn: 1.9973194        total: 224ms    remaining: 327ms
407:    learn: 1.9904558        total: 224ms    remaining: 326ms
408:    learn: 1.9837816        total: 225ms    remaining: 325ms
409:    learn: 1.9770121        total: 225ms    remaining: 324ms
410:    learn: 1.9704296        total: 225ms    remaining: 323ms
411:    learn: 1.9638928        total: 225ms    remaining: 322ms
412:    learn: 1.9572613        total: 226ms    remaining: 321ms
413:    learn: 1.9506769        total: 226ms    remaining: 320ms
414:    learn: 1.9441392        total: 226ms    remaining: 319ms
415:    learn: 1.9376482        total: 226ms    remaining: 318ms
416:    learn: 1.9312035        total: 227ms    remaining: 317ms
417:    learn: 1.9249334        total: 227ms    remaining: 316ms
418:    learn: 1.9185781        total: 227ms    remaining: 315ms
419:    learn: 1.9122685        total: 227ms    remaining: 314ms
420:    learn: 1.9060041        total: 227ms    remaining: 313ms
421:    learn: 1.8999071        total: 228ms    remaining: 312ms
422:    learn: 1.8937303        total: 228ms    remaining: 311ms
423:    learn: 1.8875980        total: 228ms    remaining: 310ms
424:    learn: 1.8816286        total: 228ms    remaining: 309ms
425:    learn: 1.8757015        total: 229ms    remaining: 308ms
426:    learn: 1.8696971        total: 229ms    remaining: 307ms
427:    learn: 1.8638535        total: 229ms    remaining: 306ms
428:    learn: 1.8579338        total: 229ms    remaining: 305ms
429:    learn: 1.8521729        total: 229ms    remaining: 304ms
430:    learn: 1.8463370        total: 230ms    remaining: 303ms
431:    learn: 1.8406578        total: 230ms    remaining: 302ms
432:    learn: 1.8350193        total: 230ms    remaining: 301ms
433:    learn: 1.8293064        total: 230ms    remaining: 300ms
434:    learn: 1.8237482        total: 231ms    remaining: 299ms
435:    learn: 1.8181168        total: 231ms    remaining: 298ms
436:    learn: 1.8126381        total: 231ms    remaining: 298ms
437:    learn: 1.8070874        total: 231ms    remaining: 297ms
438:    learn: 1.8015776        total: 231ms    remaining: 296ms
439:    learn: 1.7962162        total: 232ms    remaining: 295ms
440:    learn: 1.7908937        total: 232ms    remaining: 294ms
441:    learn: 1.7856099        total: 232ms    remaining: 293ms
442:    learn: 1.7803647        total: 232ms    remaining: 292ms
443:    learn: 1.7750484        total: 232ms    remaining: 291ms
444:    learn: 1.7698791        total: 233ms    remaining: 290ms
445:    learn: 1.7647475        total: 233ms    remaining: 289ms
446:    learn: 1.7596536        total: 233ms    remaining: 288ms
447:    learn: 1.7545972        total: 233ms    remaining: 288ms
448:    learn: 1.7495779        total: 234ms    remaining: 287ms
449:    learn: 1.7445956        total: 234ms    remaining: 286ms
450:    learn: 1.7396501        total: 234ms    remaining: 285ms
451:    learn: 1.7346309        total: 234ms    remaining: 284ms
452:    learn: 1.7297579        total: 235ms    remaining: 283ms
453:    learn: 1.7248126        total: 235ms    remaining: 282ms
454:    learn: 1.7200112        total: 235ms    remaining: 281ms
455:    learn: 1.7152455        total: 235ms    remaining: 281ms
456:    learn: 1.7105153        total: 235ms    remaining: 280ms
457:    learn: 1.7057129        total: 236ms    remaining: 279ms
458:    learn: 1.7010527        total: 236ms    remaining: 278ms
459:    learn: 1.6964274        total: 236ms    remaining: 277ms
460:    learn: 1.6918368        total: 236ms    remaining: 276ms
461:    learn: 1.6872807        total: 237ms    remaining: 275ms
462:    learn: 1.6827589        total: 237ms    remaining: 275ms
463:    learn: 1.6782711        total: 237ms    remaining: 274ms
464:    learn: 1.6738173        total: 237ms    remaining: 273ms
465:    learn: 1.6693971        total: 237ms    remaining: 272ms
466:    learn: 1.6650104        total: 238ms    remaining: 271ms
467:    learn: 1.6606569        total: 238ms    remaining: 270ms
468:    learn: 1.6563366        total: 238ms    remaining: 270ms
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469:    learn: 1.6503666        total: 238ms    remaining: 269ms
470:    learn: 1.6444590        total: 239ms    remaining: 268ms
471:    learn: 1.6386131        total: 239ms    remaining: 267ms
472:    learn: 1.6328286        total: 239ms    remaining: 266ms
473:    learn: 1.6271046        total: 239ms    remaining: 265ms
474:    learn: 1.6214409        total: 239ms    remaining: 265ms
475:    learn: 1.6158367        total: 240ms    remaining: 264ms
476:    learn: 1.6114203        total: 240ms    remaining: 263ms
477:    learn: 1.6073940        total: 240ms    remaining: 262ms
478:    learn: 1.6033988        total: 240ms    remaining: 261ms
479:    learn: 1.5979575        total: 241ms    remaining: 261ms
480:    learn: 1.5936645        total: 241ms    remaining: 260ms
481:    learn: 1.5894103        total: 241ms    remaining: 259ms
482:    learn: 1.5855234        total: 241ms    remaining: 258ms
483:    learn: 1.5813298        total: 242ms    remaining: 257ms
484:    learn: 1.5774953        total: 242ms    remaining: 257ms
485:    learn: 1.5736906        total: 242ms    remaining: 256ms
486:    learn: 1.5685129        total: 242ms    remaining: 255ms
487:    learn: 1.5633906        total: 242ms    remaining: 254ms
488:    learn: 1.5593508        total: 243ms    remaining: 253ms
489:    learn: 1.5556592        total: 243ms    remaining: 253ms
490:    learn: 1.5516774        total: 243ms    remaining: 252ms
491:    learn: 1.5480359        total: 243ms    remaining: 251ms
492:    learn: 1.5430994        total: 244ms    remaining: 250ms
493:    learn: 1.5395164        total: 244ms    remaining: 250ms
494:    learn: 1.5356474        total: 244ms    remaining: 249ms
495:    learn: 1.5321133        total: 244ms    remaining: 248ms
496:    learn: 1.5283000        total: 245ms    remaining: 247ms
497:    learn: 1.5245216        total: 245ms    remaining: 247ms
498:    learn: 1.5210560        total: 245ms    remaining: 246ms
499:    learn: 1.5176179        total: 245ms    remaining: 245ms
500:    learn: 1.5129527        total: 245ms    remaining: 244ms
501:    learn: 1.5092818        total: 246ms    remaining: 244ms
502:    learn: 1.5059192        total: 246ms    remaining: 243ms
503:    learn: 1.5013654        total: 246ms    remaining: 242ms
504:    learn: 1.4977801        total: 246ms    remaining: 241ms
505:    learn: 1.4944916        total: 247ms    remaining: 241ms
506:    learn: 1.4909584        total: 247ms    remaining: 240ms
507:    learn: 1.4877153        total: 247ms    remaining: 239ms
508:    learn: 1.4833295        total: 247ms    remaining: 238ms
509:    learn: 1.4798789        total: 247ms    remaining: 238ms
510:    learn: 1.4767076        total: 248ms    remaining: 237ms
511:    learn: 1.4735618        total: 248ms    remaining: 236ms
512:    learn: 1.4693083        total: 248ms    remaining: 236ms
513:    learn: 1.4659569        total: 248ms    remaining: 235ms
514:    learn: 1.4626366        total: 249ms    remaining: 234ms
515:    learn: 1.4595787        total: 249ms    remaining: 233ms
516:    learn: 1.4554578        total: 249ms    remaining: 233ms
517:    learn: 1.4522157        total: 249ms    remaining: 232ms
518:    learn: 1.4492260        total: 250ms    remaining: 231ms
519:    learn: 1.4462607        total: 250ms    remaining: 231ms
520:    learn: 1.4430836        total: 250ms    remaining: 230ms
521:    learn: 1.4401598        total: 250ms    remaining: 229ms
522:    learn: 1.4362179        total: 250ms    remaining: 228ms
523:    learn: 1.4331159        total: 251ms    remaining: 228ms
524:    learn: 1.4302576        total: 251ms    remaining: 227ms
525:    learn: 1.4264121        total: 251ms    remaining: 226ms
526:    learn: 1.4233836        total: 251ms    remaining: 226ms
527:    learn: 1.4205896        total: 252ms    remaining: 225ms
528:    learn: 1.4168384        total: 252ms    remaining: 224ms
529:    learn: 1.4138818        total: 252ms    remaining: 223ms
530:    learn: 1.4111508        total: 252ms    remaining: 223ms
531:    learn: 1.4084424        total: 253ms    remaining: 222ms
532:    learn: 1.4055457        total: 253ms    remaining: 221ms
533:    learn: 1.4019363        total: 253ms    remaining: 221ms
534:    learn: 1.3990930        total: 253ms    remaining: 220ms
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535:    learn: 1.3964616        total: 253ms    remaining: 219ms
536:    learn: 1.3936606        total: 254ms    remaining: 219ms
537:    learn: 1.3910665        total: 254ms    remaining: 218ms
538:    learn: 1.3884940        total: 254ms    remaining: 217ms
539:    learn: 1.3850440        total: 254ms    remaining: 217ms
540:    learn: 1.3823251        total: 255ms    remaining: 216ms
541:    learn: 1.3789391        total: 255ms    remaining: 215ms
542:    learn: 1.3764469        total: 255ms    remaining: 215ms
543:    learn: 1.3737932        total: 255ms    remaining: 214ms
544:    learn: 1.3711646        total: 255ms    remaining: 213ms
545:    learn: 1.3687226        total: 256ms    remaining: 213ms
546:    learn: 1.3654661        total: 256ms    remaining: 212ms
547:    learn: 1.3629007        total: 256ms    remaining: 211ms
548:    learn: 1.3605146        total: 256ms    remaining: 211ms
549:    learn: 1.3581486        total: 257ms    remaining: 210ms
550:    learn: 1.3549941        total: 257ms    remaining: 209ms
551:    learn: 1.3525044        total: 257ms    remaining: 209ms
552:    learn: 1.3501927        total: 257ms    remaining: 208ms
553:    learn: 1.3471174        total: 257ms    remaining: 207ms
554:    learn: 1.3446878        total: 258ms    remaining: 207ms
555:    learn: 1.3422814        total: 258ms    remaining: 206ms
556:    learn: 1.3400362        total: 258ms    remaining: 205ms
557:    learn: 1.3370604        total: 258ms    remaining: 205ms
558:    learn: 1.3348539        total: 259ms    remaining: 204ms
559:    learn: 1.3325188        total: 259ms    remaining: 203ms
560:    learn: 1.3303441        total: 259ms    remaining: 203ms
561:    learn: 1.3274625        total: 259ms    remaining: 202ms
562:    learn: 1.3251839        total: 260ms    remaining: 201ms
563:    learn: 1.3229274        total: 260ms    remaining: 201ms
564:    learn: 1.3208156        total: 260ms    remaining: 200ms
565:    learn: 1.3187221        total: 261ms    remaining: 200ms
566:    learn: 1.3159525        total: 261ms    remaining: 199ms
567:    learn: 1.3137630        total: 261ms    remaining: 199ms
568:    learn: 1.3110458        total: 261ms    remaining: 198ms
569:    learn: 1.3088976        total: 262ms    remaining: 197ms
570:    learn: 1.3068826        total: 262ms    remaining: 197ms
571:    learn: 1.3042347        total: 262ms    remaining: 196ms
572:    learn: 1.3021387        total: 262ms    remaining: 196ms
573:    learn: 1.3001706        total: 263ms    remaining: 195ms
574:    learn: 1.2981066        total: 263ms    remaining: 194ms
575:    learn: 1.2961672        total: 263ms    remaining: 194ms
576:    learn: 1.2936229        total: 263ms    remaining: 193ms
577:    learn: 1.2916093        total: 263ms    remaining: 192ms
578:    learn: 1.2897151        total: 264ms    remaining: 192ms
579:    learn: 1.2872360        total: 264ms    remaining: 191ms
580:    learn: 1.2852716        total: 264ms    remaining: 190ms
581:    learn: 1.2834216        total: 264ms    remaining: 190ms
582:    learn: 1.2810062        total: 265ms    remaining: 189ms
583:    learn: 1.2790897        total: 265ms    remaining: 189ms
584:    learn: 1.2772830        total: 265ms    remaining: 188ms
585:    learn: 1.2749297        total: 265ms    remaining: 187ms
586:    learn: 1.2730601        total: 265ms    remaining: 187ms
587:    learn: 1.2712957        total: 266ms    remaining: 186ms
588:    learn: 1.2694549        total: 266ms    remaining: 186ms
589:    learn: 1.2677163        total: 266ms    remaining: 185ms
590:    learn: 1.2654562        total: 266ms    remaining: 184ms
591:    learn: 1.2636605        total: 267ms    remaining: 184ms
592:    learn: 1.2619627        total: 267ms    remaining: 183ms
593:    learn: 1.2601947        total: 267ms    remaining: 183ms
594:    learn: 1.2585220        total: 267ms    remaining: 182ms
595:    learn: 1.2567813        total: 268ms    remaining: 181ms
596:    learn: 1.2551332        total: 268ms    remaining: 181ms
597:    learn: 1.2534194        total: 268ms    remaining: 180ms
598:    learn: 1.2512955        total: 268ms    remaining: 180ms
599:    learn: 1.2496144        total: 269ms    remaining: 179ms
600:    learn: 1.2480146        total: 269ms    remaining: 178ms
```

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601:    learn: 1.2463594        total: 269ms    remaining: 178ms
602:    learn: 1.2447832        total: 269ms    remaining: 177ms
603:    learn: 1.2431537        total: 269ms    remaining: 177ms
604:    learn: 1.2416007        total: 270ms    remaining: 176ms
605:    learn: 1.2399964        total: 270ms    remaining: 176ms
606:    learn: 1.2384665        total: 270ms    remaining: 175ms
607:    learn: 1.2368870        total: 270ms    remaining: 174ms
608:    learn: 1.2353797        total: 271ms    remaining: 174ms
609:    learn: 1.2338247        total: 271ms    remaining: 173ms
610:    learn: 1.2323396        total: 271ms    remaining: 173ms
611:    learn: 1.2308088        total: 272ms    remaining: 172ms
612:    learn: 1.2288975        total: 272ms    remaining: 172ms
613:    learn: 1.2274475        total: 272ms    remaining: 171ms
614:    learn: 1.2259545        total: 272ms    remaining: 170ms
615:    learn: 1.2244764        total: 273ms    remaining: 170ms
616:    learn: 1.2230562        total: 273ms    remaining: 169ms
617:    learn: 1.2216011        total: 273ms    remaining: 169ms
618:    learn: 1.2202020        total: 273ms    remaining: 168ms
619:    learn: 1.2187694        total: 274ms    remaining: 168ms
620:    learn: 1.2173910        total: 274ms    remaining: 167ms
621:    learn: 1.2159807        total: 274ms    remaining: 167ms
622:    learn: 1.2146228        total: 274ms    remaining: 166ms
623:    learn: 1.2132344        total: 275ms    remaining: 165ms
624:    learn: 1.2114901        total: 275ms    remaining: 165ms
625:    learn: 1.2101286        total: 275ms    remaining: 164ms
626:    learn: 1.2088105        total: 275ms    remaining: 164ms
627:    learn: 1.2074701        total: 276ms    remaining: 163ms
628:    learn: 1.2061716        total: 276ms    remaining: 163ms
629:    learn: 1.2048521        total: 276ms    remaining: 162ms
630:    learn: 1.2035728        total: 276ms    remaining: 162ms
631:    learn: 1.2022739        total: 277ms    remaining: 161ms
632:    learn: 1.2010135        total: 277ms    remaining: 161ms
633:    learn: 1.1993869        total: 277ms    remaining: 160ms
634:    learn: 1.1979144        total: 277ms    remaining: 159ms
635:    learn: 1.1966854        total: 278ms    remaining: 159ms
636:    learn: 1.1954383        total: 278ms    remaining: 158ms
637:    learn: 1.1942276        total: 278ms    remaining: 158ms
638:    learn: 1.1928003        total: 278ms    remaining: 157ms
639:    learn: 1.1916089        total: 279ms    remaining: 157ms
640:    learn: 1.1904284        total: 279ms    remaining: 156ms
641:    learn: 1.1892265        total: 279ms    remaining: 156ms
642:    learn: 1.1880636        total: 279ms    remaining: 155ms
643:    learn: 1.1868805        total: 280ms    remaining: 155ms
644:    learn: 1.1857093        total: 280ms    remaining: 154ms
645:    learn: 1.1845702        total: 280ms    remaining: 153ms
646:    learn: 1.1832259        total: 280ms    remaining: 153ms
647:    learn: 1.1821051        total: 280ms    remaining: 152ms
648:    learn: 1.1809945        total: 281ms    remaining: 152ms
649:    learn: 1.1798658        total: 281ms    remaining: 151ms
650:    learn: 1.1787718        total: 281ms    remaining: 151ms
651:    learn: 1.1776607        total: 281ms    remaining: 150ms
652:    learn: 1.1765609        total: 282ms    remaining: 150ms
653:    learn: 1.1754893        total: 282ms    remaining: 149ms
654:    learn: 1.1744066        total: 282ms    remaining: 149ms
655:    learn: 1.1733509        total: 282ms    remaining: 148ms
656:    learn: 1.1721028        total: 282ms    remaining: 147ms
657:    learn: 1.1710641        total: 283ms    remaining: 147ms
658:    learn: 1.1700148        total: 283ms    remaining: 146ms
659:    learn: 1.1689915        total: 283ms    remaining: 146ms
660:    learn: 1.1679587        total: 283ms    remaining: 145ms
661:    learn: 1.1669506        total: 284ms    remaining: 145ms
662:    learn: 1.1659339        total: 284ms    remaining: 144ms
663:    learn: 1.1649408        total: 284ms    remaining: 144ms
664:    learn: 1.1639399        total: 284ms    remaining: 143ms
665:    learn: 1.1627744        total: 284ms    remaining: 143ms
666:    learn: 1.1618028        total: 285ms    remaining: 142ms
```

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667:    learn: 1.1608402        total: 285ms    remaining: 142ms
668:    learn: 1.1598702        total: 285ms    remaining: 141ms
669:    learn: 1.1589220        total: 285ms    remaining: 141ms
670:    learn: 1.1576852        total: 286ms    remaining: 140ms
671:    learn: 1.1565715        total: 286ms    remaining: 139ms
672:    learn: 1.1556471        total: 286ms    remaining: 139ms
673:    learn: 1.1545522        total: 286ms    remaining: 138ms
674:    learn: 1.1536427        total: 287ms    remaining: 138ms
675:    learn: 1.1527417        total: 287ms    remaining: 138ms
676:    learn: 1.1515643        total: 287ms    remaining: 137ms
677:    learn: 1.1505029        total: 287ms    remaining: 136ms
678:    learn: 1.1496247        total: 288ms    remaining: 136ms
679:    learn: 1.1485812        total: 288ms    remaining: 135ms
680:    learn: 1.1477171        total: 288ms    remaining: 135ms
681:    learn: 1.1468611        total: 288ms    remaining: 134ms
682:    learn: 1.1457402        total: 289ms    remaining: 134ms
683:    learn: 1.1447287        total: 289ms    remaining: 133ms
684:    learn: 1.1438943        total: 289ms    remaining: 133ms
685:    learn: 1.1428998        total: 289ms    remaining: 132ms
686:    learn: 1.1420788        total: 290ms    remaining: 132ms
687:    learn: 1.1412657        total: 290ms    remaining: 131ms
688:    learn: 1.1402933        total: 290ms    remaining: 131ms
689:    learn: 1.1394933        total: 290ms    remaining: 130ms
690:    learn: 1.1387008        total: 290ms    remaining: 130ms
691:    learn: 1.1376568        total: 291ms    remaining: 129ms
692:    learn: 1.1367141        total: 291ms    remaining: 129ms
693:    learn: 1.1359417        total: 291ms    remaining: 128ms
694:    learn: 1.1350148        total: 291ms    remaining: 128ms
695:    learn: 1.1342549        total: 292ms    remaining: 127ms
696:    learn: 1.1335021        total: 292ms    remaining: 127ms
697:    learn: 1.1325083        total: 292ms    remaining: 126ms
698:    learn: 1.1316097        total: 292ms    remaining: 126ms
699:    learn: 1.1308760        total: 292ms    remaining: 125ms
700:    learn: 1.1299925        total: 293ms    remaining: 125ms
701:    learn: 1.1292706        total: 293ms    remaining: 124ms
702:    learn: 1.1285556        total: 293ms    remaining: 124ms
703:    learn: 1.1276095        total: 293ms    remaining: 123ms
704:    learn: 1.1267529        total: 293ms    remaining: 123ms
705:    learn: 1.1259060        total: 294ms    remaining: 122ms
706:    learn: 1.1252137        total: 294ms    remaining: 122ms
707:    learn: 1.1245280        total: 295ms    remaining: 121ms
708:    learn: 1.1236998        total: 295ms    remaining: 121ms
709:    learn: 1.1230252        total: 295ms    remaining: 121ms
710:    learn: 1.1223571        total: 295ms    remaining: 120ms
711:    learn: 1.1214697        total: 295ms    remaining: 120ms
712:    learn: 1.1206666        total: 296ms    remaining: 119ms
713:    learn: 1.1200153        total: 296ms    remaining: 119ms
714:    learn: 1.1192257        total: 296ms    remaining: 118ms
715:    learn: 1.1185849        total: 296ms    remaining: 118ms
716:    learn: 1.1179504        total: 297ms    remaining: 117ms
717:    learn: 1.1171056        total: 297ms    remaining: 117ms
718:    learn: 1.1163399        total: 297ms    remaining: 116ms
719:    learn: 1.1157213        total: 297ms    remaining: 116ms
720:    learn: 1.1149684        total: 298ms    remaining: 115ms
721:    learn: 1.1143598        total: 298ms    remaining: 115ms
722:    learn: 1.1137571        total: 298ms    remaining: 114ms
723:    learn: 1.1130206        total: 298ms    remaining: 114ms
724:    learn: 1.1124276        total: 299ms    remaining: 113ms
725:    learn: 1.1116352        total: 299ms    remaining: 113ms
726:    learn: 1.1109172        total: 299ms    remaining: 112ms
727:    learn: 1.1103391        total: 299ms    remaining: 112ms
728:    learn: 1.1096330        total: 299ms    remaining: 111ms
729:    learn: 1.1090643        total: 300ms    remaining: 111ms
730:    learn: 1.1085011        total: 300ms    remaining: 110ms
731:    learn: 1.1077468        total: 300ms    remaining: 110ms
732:    learn: 1.1070619        total: 300ms    remaining: 109ms
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733:    learn: 1.1065129        total: 301ms    remaining: 109ms
734:    learn: 1.1058394        total: 301ms    remaining: 108ms
735:    learn: 1.1052992        total: 301ms    remaining: 108ms
736:    learn: 1.1047643        total: 301ms    remaining: 108ms
737:    learn: 1.1041054        total: 302ms    remaining: 107ms
738:    learn: 1.1035791        total: 302ms    remaining: 107ms
739:    learn: 1.1028715        total: 302ms    remaining: 106ms
740:    learn: 1.1022290        total: 302ms    remaining: 106ms
741:    learn: 1.1015126        total: 302ms    remaining: 105ms
742:    learn: 1.1008042        total: 303ms    remaining: 105ms
743:    learn: 1.1001817        total: 303ms    remaining: 104ms
744:    learn: 1.0994876        total: 303ms    remaining: 104ms
745:    learn: 1.0988013        total: 303ms    remaining: 103ms
746:    learn: 1.0981227        total: 304ms    remaining: 103ms
747:    learn: 1.0974518        total: 304ms    remaining: 102ms
748:    learn: 1.0968494        total: 304ms    remaining: 102ms
749:    learn: 1.0962616        total: 304ms    remaining: 101ms
750:    learn: 1.0956096        total: 304ms    remaining: 101ms
751:    learn: 1.0949650        total: 305ms    remaining: 100ms
752:    learn: 1.0943845        total: 305ms    remaining: 100ms
753:    learn: 1.0938181        total: 305ms    remaining: 99.5ms
754:    learn: 1.0931916        total: 305ms    remaining: 99.1ms
755:    learn: 1.0925722        total: 306ms    remaining: 98.6ms
756:    learn: 1.0920126        total: 306ms    remaining: 98.1ms
757:    learn: 1.0915146        total: 306ms    remaining: 97.7ms
758:    learn: 1.0909650        total: 306ms    remaining: 97.2ms
759:    learn: 1.0904226        total: 306ms    remaining: 96.8ms
760:    learn: 1.0899353        total: 307ms    remaining: 96.3ms
761:    learn: 1.0894025        total: 307ms    remaining: 95.8ms
762:    learn: 1.0889231        total: 307ms    remaining: 95.4ms
763:    learn: 1.0883999        total: 307ms    remaining: 94.9ms
764:    learn: 1.0878834        total: 307ms    remaining: 94.5ms
765:    learn: 1.0874143        total: 308ms    remaining: 94ms
766:    learn: 1.0869070        total: 308ms    remaining: 93.5ms
767:    learn: 1.0863982        total: 308ms    remaining: 93.1ms
768:    learn: 1.0859002        total: 308ms    remaining: 92.6ms
769:    learn: 1.0854085        total: 309ms    remaining: 92.2ms
770:    learn: 1.0849110        total: 309ms    remaining: 91.7ms
771:    learn: 1.0845119        total: 309ms    remaining: 91.3ms
772:    learn: 1.0840331        total: 309ms    remaining: 90.8ms
773:    learn: 1.0835902        total: 309ms    remaining: 90.4ms
774:    learn: 1.0831198        total: 310ms    remaining: 89.9ms
775:    learn: 1.0826374        total: 310ms    remaining: 89.5ms
776:    learn: 1.0821605        total: 310ms    remaining: 89ms
777:    learn: 1.0816891        total: 310ms    remaining: 88.6ms
778:    learn: 1.0813109        total: 311ms    remaining: 88.1ms
779:    learn: 1.0809364        total: 311ms    remaining: 87.7ms
780:    learn: 1.0804752        total: 311ms    remaining: 87.2ms
781:    learn: 1.0801067        total: 311ms    remaining: 86.8ms
782:    learn: 1.0796456        total: 311ms    remaining: 86.3ms
783:    learn: 1.0791945        total: 312ms    remaining: 85.9ms
784:    learn: 1.0788343        total: 312ms    remaining: 85.4ms
785:    learn: 1.0783907        total: 312ms    remaining: 85ms
786:    learn: 1.0779072        total: 312ms    remaining: 84.5ms
787:    learn: 1.0774292        total: 313ms    remaining: 84.1ms
788:    learn: 1.0769890        total: 313ms    remaining: 83.7ms
789:    learn: 1.0765974        total: 313ms    remaining: 83.2ms
790:    learn: 1.0761738        total: 313ms    remaining: 82.8ms
791:    learn: 1.0757126        total: 313ms    remaining: 82.3ms
792:    learn: 1.0752566        total: 314ms    remaining: 81.9ms
793:    learn: 1.0748057        total: 314ms    remaining: 81.4ms
794:    learn: 1.0743868        total: 314ms    remaining: 81ms
795:    learn: 1.0739826        total: 314ms    remaining: 80.6ms
796:    learn: 1.0735830        total: 315ms    remaining: 80.1ms
797:    learn: 1.0731486        total: 315ms    remaining: 79.7ms
798:    learn: 1.0727191        total: 315ms    remaining: 79.3ms
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799:    learn: 1.0722944        total: 315ms    remaining: 78.8ms
800:    learn: 1.0718745        total: 316ms    remaining: 78.4ms
801:    learn: 1.0715233        total: 316ms    remaining: 78ms
802:    learn: 1.0711111        total: 316ms    remaining: 77.5ms
803:    learn: 1.0707212        total: 316ms    remaining: 77.1ms
804:    learn: 1.0703789        total: 316ms    remaining: 76.7ms
805:    learn: 1.0700117        total: 317ms    remaining: 76.2ms
806:    learn: 1.0696139        total: 317ms    remaining: 75.8ms
807:    learn: 1.0692206        total: 317ms    remaining: 75.4ms
808:    learn: 1.0688461        total: 317ms    remaining: 74.9ms
809:    learn: 1.0685187        total: 318ms    remaining: 74.5ms
810:    learn: 1.0681679        total: 318ms    remaining: 74.1ms
811:    learn: 1.0677883        total: 318ms    remaining: 73.6ms
812:    learn: 1.0674129        total: 318ms    remaining: 73.2ms
813:    learn: 1.0670417        total: 318ms    remaining: 72.8ms
814:    learn: 1.0666850        total: 319ms    remaining: 72.3ms
815:    learn: 1.0663743        total: 319ms    remaining: 71.9ms
816:    learn: 1.0660423        total: 319ms    remaining: 71.5ms
817:    learn: 1.0656840        total: 319ms    remaining: 71.1ms
818:    learn: 1.0653298        total: 320ms    remaining: 70.6ms
819:    learn: 1.0649869        total: 320ms    remaining: 70.2ms
820:    learn: 1.0646667        total: 320ms    remaining: 69.8ms
821:    learn: 1.0643223        total: 320ms    remaining: 69.3ms
822:    learn: 1.0640303        total: 320ms    remaining: 68.9ms
823:    learn: 1.0636922        total: 321ms    remaining: 68.5ms
824:    learn: 1.0633626        total: 321ms    remaining: 68.1ms
825:    learn: 1.0630566        total: 321ms    remaining: 67.7ms
826:    learn: 1.0627384        total: 321ms    remaining: 67.2ms
827:    learn: 1.0624238        total: 322ms    remaining: 66.8ms
828:    learn: 1.0621127        total: 322ms    remaining: 66.4ms
829:    learn: 1.0617967        total: 322ms    remaining: 66ms
830:    learn: 1.0614847        total: 322ms    remaining: 65.5ms
831:    learn: 1.0611923        total: 322ms    remaining: 65.1ms
832:    learn: 1.0609033        total: 323ms    remaining: 64.7ms
833:    learn: 1.0606052        total: 323ms    remaining: 64.3ms
834:    learn: 1.0603104        total: 323ms    remaining: 63.8ms
835:    learn: 1.0600190        total: 323ms    remaining: 63.4ms
836:    learn: 1.0597307        total: 324ms    remaining: 63ms
837:    learn: 1.0594457        total: 324ms    remaining: 62.6ms
838:    learn: 1.0591638        total: 324ms    remaining: 62.2ms
839:    learn: 1.0588731        total: 324ms    remaining: 61.8ms
840:    learn: 1.0585644        total: 324ms    remaining: 61.3ms
841:    learn: 1.0582599        total: 325ms    remaining: 60.9ms
842:    learn: 1.0579913        total: 325ms    remaining: 60.5ms
843:    learn: 1.0576924        total: 325ms    remaining: 60.1ms
844:    learn: 1.0574283        total: 325ms    remaining: 59.7ms
845:    learn: 1.0571609        total: 326ms    remaining: 59.3ms
846:    learn: 1.0568966        total: 326ms    remaining: 58.9ms
847:    learn: 1.0566352        total: 326ms    remaining: 58.4ms
848:    learn: 1.0563767        total: 326ms    remaining: 58ms
849:    learn: 1.0561313        total: 327ms    remaining: 57.6ms
850:    learn: 1.0558563        total: 327ms    remaining: 57.2ms
851:    learn: 1.0556043        total: 327ms    remaining: 56.8ms
852:    learn: 1.0553348        total: 327ms    remaining: 56.4ms
853:    learn: 1.0550878        total: 327ms    remaining: 56ms
854:    learn: 1.0548504        total: 328ms    remaining: 55.6ms
855:    learn: 1.0545875        total: 328ms    remaining: 55.2ms
856:    learn: 1.0543466        total: 328ms    remaining: 54.7ms
857:    learn: 1.0540891        total: 328ms    remaining: 54.3ms
858:    learn: 1.0538530        total: 329ms    remaining: 53.9ms
859:    learn: 1.0536231        total: 329ms    remaining: 53.5ms
860:    learn: 1.0533718        total: 329ms    remaining: 53.1ms
861:    learn: 1.0531416        total: 329ms    remaining: 52.7ms
862:    learn: 1.0528953        total: 329ms    remaining: 52.3ms
863:    learn: 1.0526715        total: 330ms    remaining: 51.9ms
864:    learn: 1.0524470        total: 330ms    remaining: 51.5ms
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865:    learn: 1.0522200        total: 330ms    remaining: 51.1ms
866:    learn: 1.0519667        total: 330ms    remaining: 50.7ms
867:    learn: 1.0517168        total: 331ms    remaining: 50.3ms
868:    learn: 1.0514478        total: 331ms    remaining: 49.9ms
869:    learn: 1.0511827        total: 331ms    remaining: 49.5ms
870:    learn: 1.0509215        total: 331ms    remaining: 49ms
871:    learn: 1.0506642        total: 331ms    remaining: 48.6ms
872:    learn: 1.0504106        total: 332ms    remaining: 48.2ms
873:    learn: 1.0502173        total: 332ms    remaining: 47.8ms
874:    learn: 1.0500041        total: 332ms    remaining: 47.5ms
875:    learn: 1.0498139        total: 332ms    remaining: 47.1ms
876:    learn: 1.0495985        total: 333ms    remaining: 46.7ms
877:    learn: 1.0493899        total: 333ms    remaining: 46.3ms
878:    learn: 1.0492039        total: 333ms    remaining: 45.9ms
879:    learn: 1.0489989        total: 333ms    remaining: 45.5ms
880:    learn: 1.0488159        total: 334ms    remaining: 45.1ms
881:    learn: 1.0486075        total: 334ms    remaining: 44.7ms
882:    learn: 1.0484069        total: 334ms    remaining: 44.3ms
883:    learn: 1.0482279        total: 334ms    remaining: 43.9ms
884:    learn: 1.0480308        total: 334ms    remaining: 43.5ms
885:    learn: 1.0478546        total: 335ms    remaining: 43.1ms
886:    learn: 1.0476529        total: 335ms    remaining: 42.7ms
887:    learn: 1.0474601        total: 335ms    remaining: 42.3ms
888:    learn: 1.0472878        total: 335ms    remaining: 41.9ms
889:    learn: 1.0470982        total: 336ms    remaining: 41.5ms
890:    learn: 1.0469287        total: 336ms    remaining: 41.1ms
891:    learn: 1.0467334        total: 336ms    remaining: 40.7ms
892:    learn: 1.0465480        total: 336ms    remaining: 40.3ms
893:    learn: 1.0463639        total: 336ms    remaining: 39.9ms
894:    learn: 1.0461695        total: 337ms    remaining: 39.5ms
895:    learn: 1.0460059        total: 337ms    remaining: 39.1ms
896:    learn: 1.0458062        total: 337ms    remaining: 38.7ms
897:    learn: 1.0456276        total: 337ms    remaining: 38.3ms
898:    learn: 1.0454679        total: 338ms    remaining: 37.9ms
899:    learn: 1.0452729        total: 338ms    remaining: 37.5ms
900:    learn: 1.0450982        total: 338ms    remaining: 37.1ms
901:    learn: 1.0449256        total: 338ms    remaining: 36.7ms
902:    learn: 1.0447705        total: 338ms    remaining: 36.4ms
903:    learn: 1.0446169        total: 339ms    remaining: 36ms
904:    learn: 1.0444379        total: 339ms    remaining: 35.6ms
905:    learn: 1.0442699        total: 339ms    remaining: 35.2ms
906:    learn: 1.0441039        total: 339ms    remaining: 34.8ms
907:    learn: 1.0439372        total: 340ms    remaining: 34.4ms
908:    learn: 1.0437723        total: 340ms    remaining: 34ms
909:    learn: 1.0436094        total: 340ms    remaining: 33.6ms
910:    learn: 1.0434375        total: 340ms    remaining: 33.2ms
911:    learn: 1.0432920        total: 340ms    remaining: 32.9ms
912:    learn: 1.0431227        total: 341ms    remaining: 32.5ms
913:    learn: 1.0429557        total: 341ms    remaining: 32.1ms
914:    learn: 1.0427659        total: 341ms    remaining: 31.7ms
915:    learn: 1.0426099        total: 341ms    remaining: 31.3ms
916:    learn: 1.0424238        total: 342ms    remaining: 30.9ms
917:    learn: 1.0422704        total: 342ms    remaining: 30.5ms
918:    learn: 1.0421326        total: 342ms    remaining: 30.1ms
919:    learn: 1.0419961        total: 342ms    remaining: 29.8ms
920:    learn: 1.0418374        total: 343ms    remaining: 29.4ms
921:    learn: 1.0416882        total: 343ms    remaining: 29ms
922:    learn: 1.0415408        total: 343ms    remaining: 28.6ms
923:    learn: 1.0413843        total: 343ms    remaining: 28.2ms
924:    learn: 1.0412525        total: 343ms    remaining: 27.8ms
925:    learn: 1.0411221        total: 344ms    remaining: 27.5ms
926:    learn: 1.0409693        total: 344ms    remaining: 27.1ms
927:    learn: 1.0408269        total: 344ms    remaining: 26.7ms
928:    learn: 1.0406768        total: 344ms    remaining: 26.3ms
929:    learn: 1.0405367        total: 345ms    remaining: 25.9ms
930:    learn: 1.0403879        total: 345ms    remaining: 25.6ms
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931:    learn: 1.0402408        total: 345ms    remaining: 25.2ms
932:    learn: 1.0401166        total: 345ms    remaining: 24.8ms
933:    learn: 1.0399715        total: 345ms    remaining: 24.4ms
934:    learn: 1.0398365        total: 346ms    remaining: 24ms
935:    learn: 1.0397150        total: 346ms    remaining: 23.7ms
936:    learn: 1.0395731        total: 346ms    remaining: 23.3ms
937:    learn: 1.0394410        total: 346ms    remaining: 22.9ms
938:    learn: 1.0393105        total: 347ms    remaining: 22.5ms
939:    learn: 1.0391923        total: 347ms    remaining: 22.1ms
940:    learn: 1.0390754        total: 347ms    remaining: 21.8ms
941:    learn: 1.0389379        total: 347ms    remaining: 21.4ms
942:    learn: 1.0388109        total: 347ms    remaining: 21ms
943:    learn: 1.0386853        total: 348ms    remaining: 20.6ms
944:    learn: 1.0385569        total: 348ms    remaining: 20.2ms
945:    learn: 1.0384302        total: 348ms    remaining: 19.9ms
946:    learn: 1.0383075        total: 348ms    remaining: 19.5ms
947:    learn: 1.0381831        total: 349ms    remaining: 19.1ms
948:    learn: 1.0380604        total: 349ms    remaining: 18.7ms
949:    learn: 1.0379404        total: 349ms    remaining: 18.4ms
950:    learn: 1.0377997        total: 349ms    remaining: 18ms
951:    learn: 1.0376609        total: 349ms    remaining: 17.6ms
952:    learn: 1.0375242        total: 350ms    remaining: 17.2ms
953:    learn: 1.0373894        total: 350ms    remaining: 16.9ms
954:    learn: 1.0372734        total: 350ms    remaining: 16.5ms
955:    learn: 1.0371417        total: 350ms    remaining: 16.1ms
956:    learn: 1.0370118        total: 351ms    remaining: 15.8ms
957:    learn: 1.0368837        total: 351ms    remaining: 15.4ms
958:    learn: 1.0367724        total: 351ms    remaining: 15ms
959:    learn: 1.0366534        total: 351ms    remaining: 14.6ms
960:    learn: 1.0365293        total: 351ms    remaining: 14.3ms
961:    learn: 1.0364128        total: 352ms    remaining: 13.9ms
962:    learn: 1.0363054        total: 352ms    remaining: 13.5ms
963:    learn: 1.0361911        total: 352ms    remaining: 13.2ms
964:    learn: 1.0360781        total: 352ms    remaining: 12.8ms
965:    learn: 1.0359736        total: 353ms    remaining: 12.4ms
966:    learn: 1.0358627        total: 353ms    remaining: 12ms
967:    learn: 1.0357577        total: 353ms    remaining: 11.7ms
968:    learn: 1.0356540        total: 353ms    remaining: 11.3ms
969:    learn: 1.0355598        total: 354ms    remaining: 10.9ms
970:    learn: 1.0354509        total: 354ms    remaining: 10.6ms
971:    learn: 1.0353499        total: 354ms    remaining: 10.2ms
972:    learn: 1.0352578        total: 354ms    remaining: 9.83ms
973:    learn: 1.0351667        total: 354ms    remaining: 9.46ms
974:    learn: 1.0350765        total: 355ms    remaining: 9.09ms
975:    learn: 1.0349892        total: 355ms    remaining: 8.73ms
976:    learn: 1.0349004        total: 355ms    remaining: 8.36ms
977:    learn: 1.0348125        total: 355ms    remaining: 7.99ms
978:    learn: 1.0347134        total: 356ms    remaining: 7.63ms
979:    learn: 1.0346269        total: 356ms    remaining: 7.26ms
980:    learn: 1.0345413        total: 356ms    remaining: 6.89ms
981:    learn: 1.0344444        total: 356ms    remaining: 6.53ms
982:    learn: 1.0343521        total: 356ms    remaining: 6.16ms
983:    learn: 1.0342683        total: 357ms    remaining: 5.8ms
984:    learn: 1.0341737        total: 357ms    remaining: 5.43ms
985:    learn: 1.0340835        total: 357ms    remaining: 5.07ms
986:    learn: 1.0339874        total: 357ms    remaining: 4.71ms
987:    learn: 1.0338990        total: 357ms    remaining: 4.34ms
988:    learn: 1.0338072        total: 358ms    remaining: 3.98ms
989:    learn: 1.0337134        total: 358ms    remaining: 3.62ms
990:    learn: 1.0336337        total: 358ms    remaining: 3.25ms
991:    learn: 1.0335547        total: 358ms    remaining: 2.89ms
992:    learn: 1.0334700        total: 359ms    remaining: 2.53ms
993:    learn: 1.0333812        total: 359ms    remaining: 2.17ms
994:    learn: 1.0332909        total: 359ms    remaining: 1.8ms
995:    learn: 1.0332005        total: 359ms    remaining: 1.44ms
996:    learn: 1.0331137        total: 359ms    remaining: 1.08ms
```

```
997:    learn: 1.0330257        total: 360ms    remaining: 720us
998:    learn: 1.0329504        total: 360ms    remaining: 360us
999:    learn: 1.0328758        total: 360ms    remaining: 0us
    Actual  Predicted
0       20  21.172132
1       27  30.266037
2       69  80.799599
3       30  21.172132
4       62  67.178379
5       35  30.266037
6       24  21.172132
7       86  80.799599
8       76  67.178379
9       17  21.172132
10      47  53.797536
11      85  80.799599
12      42  30.266037
No of Hours = 9.25
Predicted Score = 88.04166450847502
Mean Squared Error: 46.94101120783008
Mean Absolute Error: 6.056300015080597
```

In [19]:
```
model(dtr)
```

```
    Actual  Predicted
0       20       21.0
1       27       30.0
2       69       81.0
3       30       21.0
4       62       67.0
5       35       30.0
6       24       21.0
7       86       81.0
8       76       67.0
9       17       21.0
10      47       54.0
11      85       81.0
12      42       30.0
No of Hours = 9.25
Predicted Score = 88.0
Mean Squared Error: 48.07692307692308
Mean Absolute Error: 6.076923076923077
```

In [20]:
```
model(rfr)
```

```
    Actual  Predicted
0       20   23.41375
1       27   29.29500
2       69   79.03000
3       30   23.41375
4       62   63.31000
5       35   34.76625
6       24   23.41375
7       86   80.67500
8       76   66.78000
9       17   23.41375
10      47   54.88500
11      85   80.67500
12      42   29.29500
No of Hours = 9.25
Predicted Score = 88.445
Mean Squared Error: 43.06237079326923
Mean Absolute Error: 5.409903846153847
```