```
import numpy as np
import matplotlib.pyplot as plt
from sklearn.datasets import fetch_openml
from sklearn.model_selection import train_test_split
from sklearn.neighbors import KNeighborsClassifier
from sklearn.metrics import accuracy_score
```

```
mnist = fetch_openml('mnist_784', version=1, as_frame=False)
X, y = mnist["data"], mnist["target"].astype(int)
```

```
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)
```

```
knn = KNeighborsClassifier(n_neighbors=3)  # k=3
knn.fit(X_train, y_train)
```

```
KNeighborsClassifier
KNeighborsClassifier(n_neighbors=3)
```

```
y_pred = knn.predict(X_test)
accuracy = accuracy_score(y_test, y_pred)
print(f"Accuracy: {accuracy*100:.2f}%")
```

```
Accuracy: 97.13%
```

```
fig, axes = plt.subplots(2, 5, figsize=(10, 4))
axes = axes.ravel()
for i in range(10):
    axes[i].imshow(X_test[i].reshape(28, 28), cmap="gray")
    axes[i].set_title(f"Pred: {y_pred[i]}")
    axes[i].axis("off")
plt.tight_layout()
plt.show()
```