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# Importing the required library
import matplotlib.pyplot as plt

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# Background:
# This pie chart was created to visually represent the structure of the
survey instrument used in the study.
# The goal was to demonstrate the balance of question types—quantitative
and qualitative—used to explore
# the cognitive, emotional, and behavioral effects of heat exposure on
construction workers.
# The breakdown was derived from a review of the survey design, where
each item was categorized
# by format: Likert-scale (e.g., fatigue level), multiple-choice (e.g.,
coping methods), open-ended (e.g., personal reflections),
# and the third/follow-up survey conducted under fair weather conditions.
# -----

# Data Labels and Values:
# The values are based on the number of questions falling into each
category.
labels = [
    'Likert-Scale Items',          # Used for measuring fatigue, mood,
    recovery, etc.
    'Multiple-Choice Questions',  # Used for selecting common coping
    strategies, etc.
    'Open-Ended Responses',       # Used to capture personal insights
    and emotional narratives
    'Fair Weather Follow-Up'      # Separate qualitative-only follow-up
    reflecting improved conditions
]
sizes = [35, 25, 25, 15] # Proportional breakdown by question type (in
%)

# Custom color palette for visual clarity
colors = ['#2E86C1', '#17A589', '#73C6B6', '#B9E38C']

# Plotting the pie chart
plt.figure(figsize=(8, 6))
plt.pie(
    sizes,
    labels=labels,
    autopct='%1.1f%%',
    startangle=140,
    colors=colors
)

# Title and layout formatting
plt.title('Survey Instrument Composition by Question Type')
plt.axis('equal') # Ensures pie is drawn as a circle
plt.tight_layout()

# Display the chart

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plt.show()
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