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TEACHING NES-Elementary

New Hampshire Foundations of Reading Test



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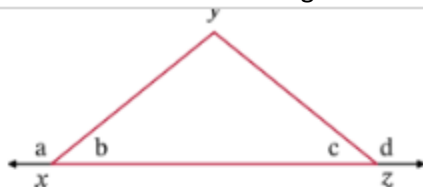
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Question: 1

Step 7 in the proof should contain which of the following statements?



Given: $\angle a \cong \angle d$
Prove: $\triangle XYZ$ is isosceles

Statement	Reason
1. $\angle a \cong \angle d$	Given
2. $m\angle a + m\angle b = 180^\circ$; $m\angle c + m\angle d = 180^\circ$	Linear pair angles are supplementary
3. $m\angle a + m\angle b = m\angle c + m\angle d$	Substitution
4. $m\angle a = m\angle d$	Congruent angles have equal measures
5. $m\angle b = m\angle c$	_____
6. $\angle b \cong \angle c$	Congruent angles have equal measures
7. _____	If two angles of a triangle are congruent, the sides opposite them are congruent
8. $\triangle XYZ$ is isosceles	An isosceles triangle has two congruent sides

■

- a. $\overline{XY} \cong \overline{ZY}$
- b. $\overline{XZ} \cong \overline{XZ}$
- c. $\overline{XY} \cong \overline{XZ}$
- d. $\angle YXZ \cong \angle YZX$

- A. Option A
- B. Option B
- C. Option C
- D. Option D

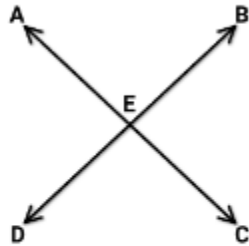
Answer: A

Explanation:

Because Step 6 established that $\angle b \cong \angle c$, we can conclude that the sides opposite these congruent angles are congruent, or $\overline{XY} \cong \overline{ZY}$.

Question: 2

Which of the following justifies step 7 in the proof?



Given: $\angle BEA \cong \angle DEA$
 Prove: $\overleftrightarrow{BD} \perp \overleftrightarrow{AC}$

Statement	Reason
1. $\angle BEA \cong \angle DEA$	Given
2. $\angle BEA + \angle DEA = 180^\circ$	Linear pair angles add up to 180°
3. _____	Substitution
4. $2 \times \angle BEA = 180^\circ$	Combine like terms
5. $\angle BEA = 90^\circ$	Division property of equality
6. $\angle BEA$ is a right angle	Definition of right angle
7. $\overleftrightarrow{BD} \perp \overleftrightarrow{AC}$	_____

- A. ASA
- B. Corresponding parts of congruent triangles are congruent
- C. Definition of supplementary angles
- D. Definition of perpendicular lines

Answer: D

Explanation:

Step 6 established that $\angle BEA$ was a right angle. According to the definition of perpendicular lines, two lines that meet at a right angle are perpendicular.

Question: 3

How many diagonals are in a dodecagon?

- A. 12
- B. 24
- C. 54
- D. 108

Answer: C

Explanation:

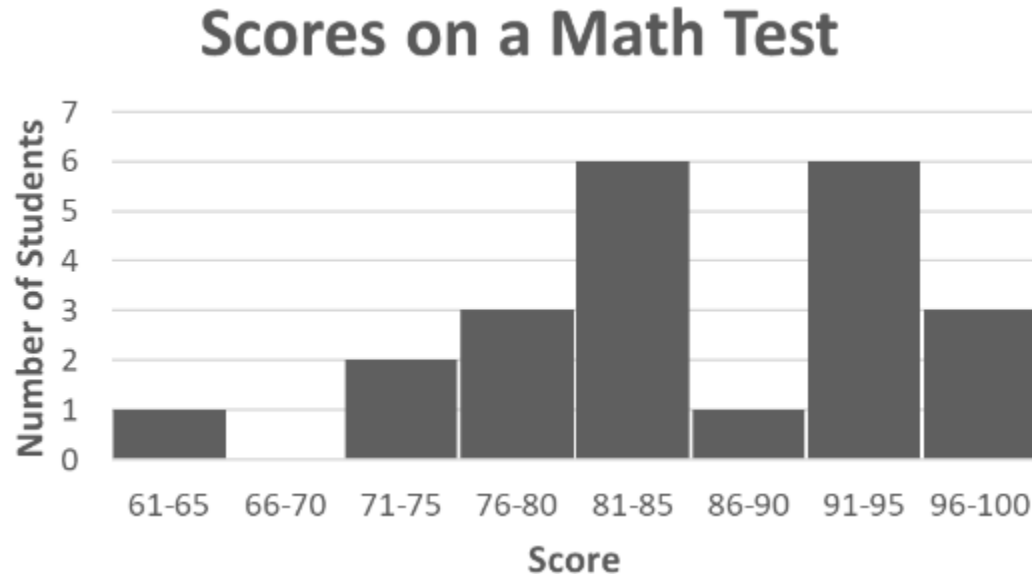
To find the number of diagonals in a polygon, use the formula $\frac{n(n-3)}{2}$, where n is the number of sides on the polygon. A dodecagon has 12 sides, so substitute 12 for n and simplify.

$$\frac{12(12-3)}{2} = \frac{12(9)}{2} = \frac{108}{2} = 54$$

Therefore, a dodecagon has 54 diagonals.

Question: 4

Based on the histogram below, how many students scored 75 points or fewer on the math test?



- A. 0 students
- B. 2 students
- C. 3 students
- D. 6 students

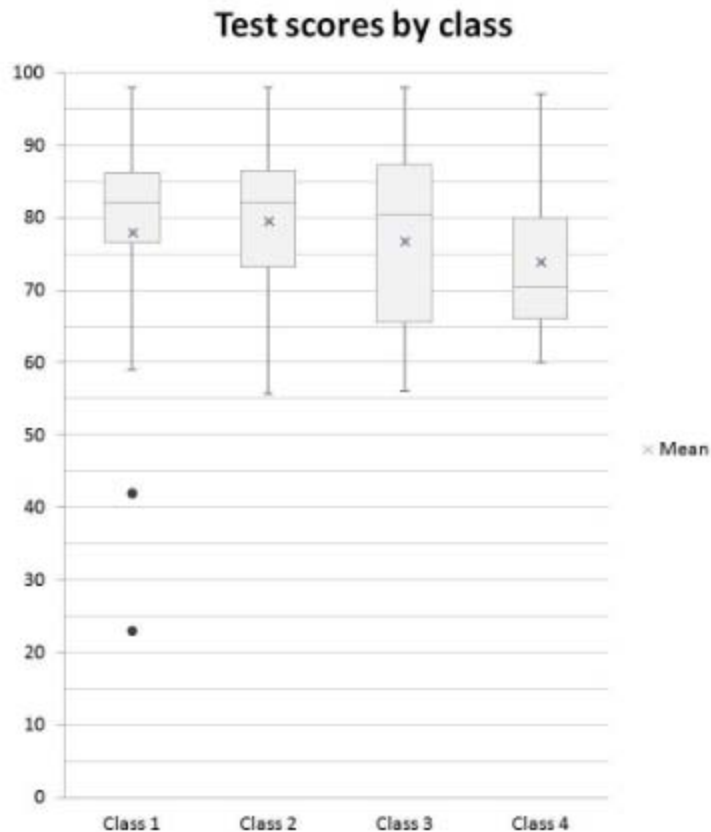
Answer: C

Explanation:

The question asks us how many students scored "75 points or fewer" on the math test. This means we are looking for all the data contained in the intervals 61—65, 66—70, and 71—75. From the histogram we may not know the exact scores of these students, but we do know that all the scores contained in these intervals must be 75 points or less. Only 1 student scored between 61 and 65 points, 0 students scored between 66 and 70 points, and 2 students scored between 71 and 75 points. Because $1 + 0 + 2 = 3$, we can conclude that 3 students scored 75 points or fewer on the math test.

Question: 5

The box-and-whisker plot displays student test scores by class period.



Which of the following statements is true of the data?

- A. The mean better reflects student performance in class 1 than the median.
- B. The mean test score for class 1 and 2 is the same.
- C. The median test score for class 1 and 2 is the same.
- D. The median test score is above the mean for class 4.

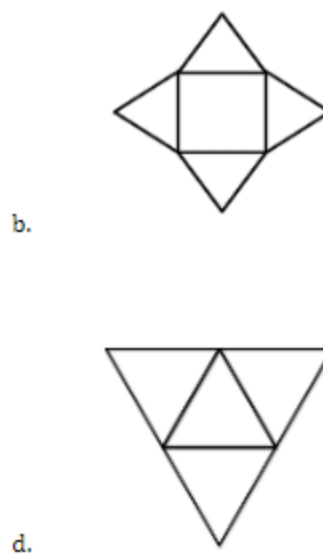
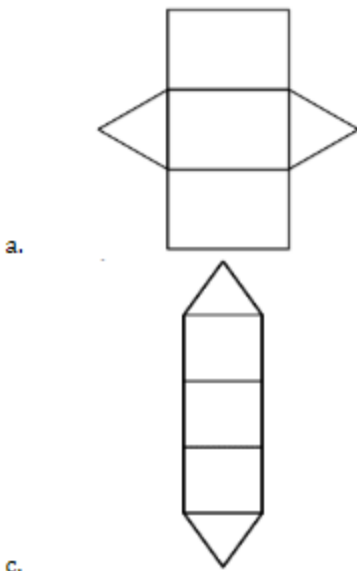
Answer: C

Explanation:

The line through the center of the box represents the median. The median test score for classes 1 and 2 is 82. Note that for class 1, the median is a better representation of the data than the mean. There are low outliers, points which lie outside of standard deviations from the mean, which bring down the average test score. In cases such as this, the mean is not the best measure of central tendency.

Question: 6

Which of the following represents the net of a triangular prism?



- A. Option A
- B. Option B
- C. Option C
- D. Option D

Answer: A

Explanation:

The net of a triangular prism has three rectangular faces and two triangular faces, and the rectangular faces must all be able to connect to each other directly. This is shown in choice A.

Question: 7

A tree with a height of 15 feet casts a shadow that is 5 feet in length. A man standing at the base of the shadow formed by the tree is 6 feet tall. How long is the shadow cast by the man?

- A. 1.5 feet
- B. 2 feet
- C. 2.5 feet
- D. 3 feet

Answer: B

Explanation:

The following proportion may be written and solved for x : $\frac{15 \text{ ft}}{5 \text{ ft}} = \frac{6 \text{ ft}}{x \text{ ft}}$. Cross multiplying results in $15x = 30$. Dividing by 15 gives $x = 2$. Thus, the shadow cast by the man is 2 feet in length.

Question: 8

Mr. Mancelli teaches fifth-grade math. He is making prize bags for the winners of a math game. If he has eight candy bars and twelve packages of gum, what is the largest number of identical prize bags he can make without having any left-over candy bars or packages of gum?

- A. 2
- B. 4
- C. 6
- D. 8

Answer: B

Explanation:

Since Mr. Mancelli has eight candy bars, he can make at most eight identical bags, each containing a single candy bar and a single package of gum; in this case, however, he will have four packages of gum remaining. To determine the greatest number of prize bags he can make so that no candy bars or packages of gum remain, he needs to find the largest number of groups that both 8 and 12 can be split into. In other words, he must find the greatest common divisor (or greatest common factor) of 8 and 12. The factors of 8 are 1, 2, 4, and 8. The factors of 12 are 1, 2, 3, 4, 6, and 12. The greatest common factor between these two numbers is 4. The greatest common divisor of 8 and 12 is 4. He can make four prize bags, each of which contains two candy bars and three packages of gum. Therefore, the correct choice is B.

Question: 9

Kyle bats third in the batting order for the Badgers baseball team. The table below shows the number of hits that Kyle had in each of 7 consecutive games played during one week in July.

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Hits	1	2	3	1	1	4	2

What is the median of the numbers in the distribution shown in the table?

- A. 1
- B. 2
- C. 3
- D. 4

Answer: B

Explanation:

The median of a data set is the middle element of the set after it is sorted in numerical order.

1, 1, 1, 2, 2, 3, 4

In this example the median is 2.

Question: 10

The ice cube below is slowly changing to a liquid. What is the name of this process?



- A. Evaporation
- B. Condensation
- C. Melting
- D. Freezing

Answer: C

Explanation:

Melting. Melting occurs when a solid changes to a liquid. Evaporation occurs when a liquid changes into a gas. Condensation occurs when a gas changes into a liquid. Freezing occurs when a liquid changes into a solid. Therefore, the correct choice is C.

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