ACTAAP

Arkansas Comprehensive Testing, Assessment and Accountability Program

Released Item Booklet

Benchmark Examination
Grade 6

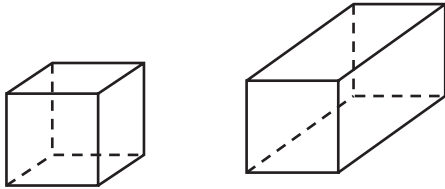## March 2005 Administration

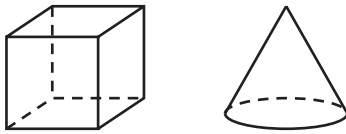**Arkansas Department of Education**

CALCULATOR NOT PERMITTED — ITEMS 1–8

1. Miss Carroll asked her students to glue together a cube and a square-based pyramid to form a model of a house with a roof. Which two 3-dimensional figures did the students use?

   A.

   B.

   * C.
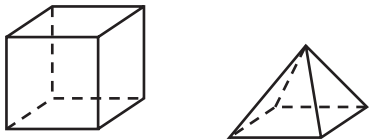
   D.
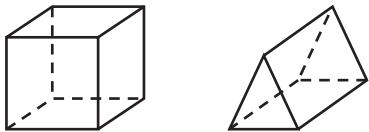
Use the figure below to answer question 2.
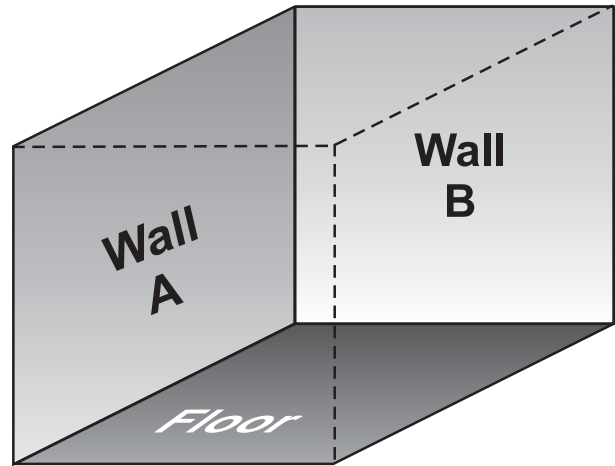
2. In the box-shaped room above, what is the geometric term for the intersection of the floor, Wall A, and Wall B?

   A. plane

   * B. vertex

   C. rectangle

   D. line segment

3. A survey crew is measuring the length and width of a lot on which a post office will be built. What unit of measurement would be **most** appropriate to use?
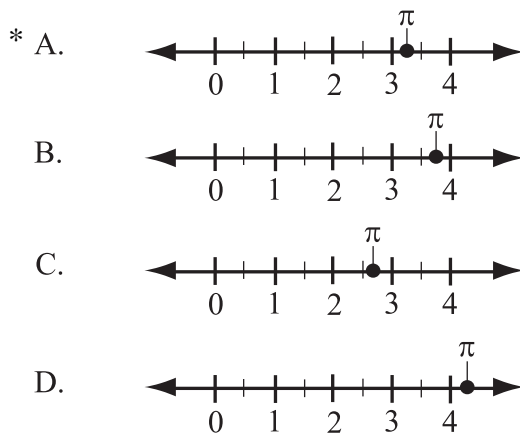
   * A. feet

   B. inches

   C. kilometers

   D. centimeters

4. Which of the following is another way to express the equation below?

$$88 - k = 27$$

  A. $k + 61 = 88$

* B. $27 + k = 88$

  C. $88 + k = 27$

  D. $88 - 61 = k$

5. Which of the following shows the approximate location of π on a number line?

* A.

  B.

  C.

  D.

6. A science class is asked to track the growth rate of a caterpillar by measuring the length of the caterpillar to the nearest millimeter. Which of the following measuring tools would be **most** appropriate for this task?

  A.   inch ruler

  B.   yard stick

  C.   meter stick

* D.   centimeter ruler

7. Which of the following is a triangular-based pyramid?

A.

B.

C.

* D.
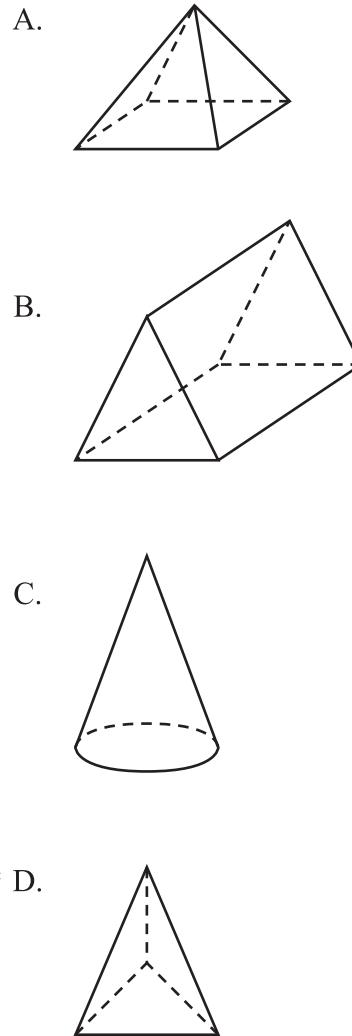
8. Consuela's class has an outdoor thermometer. One day, Consuela checks the thermometer and discovers it is covered with ice. What might the temperature be outside?

* A.   0°C

  B.   15°C

  C.   26°C

  D.   32°C

3

CALCULATOR PERMITTED — ITEMS 9–40

9. The four families listed in the table below put fences around the perimeters of their rectangular gardens. Which garden required the **most** fencing?

| FAMILY	DIMENSIONS OF GARDENS	
	Length	Width
Chen	35 feet	70 feet
Combs	50 feet	50 feet
Bishop	40 feet	55 feet
Becerra	40 feet	60 feet

* A.   Chen

B.   Combs

C.   Bishop

D.   Becerra

10. John and Michael are playing a game. The game contains 14 blue cards and 13 red cards. Michael wins if the card he draws from the stack is red, but if it is blue, John wins. Is this game fair or biased, and why?

A.   fair, because red is more likely to be drawn

B.   fair, because blue is more likely to be drawn

C.   biased, because red is more likely to be drawn

* D.   biased, because blue is more likely to be drawn

11. Jim bought a gallon of milk. He will drink an 8-ounce glass every day with his breakfast. How many days will his gallon of milk last?

A.   2

B.   4

C.   8

* D.   16

12. Anna wants to buy packs of gum for her class. Each pack costs $0.25. She has $5.50. **Not** including tax, how many packs of gum can she buy?

A.   20

* B.   22

C.   25

D.   55

13. Vicky's family planted a Japanese maple tree in their yard the day she was born. The tree has grown about 7 inches each year. If the tree has grown 3.5 feet, how old is Vicky?

* A.   6

B.   11

C.   18

D.   25

PART II   Released Mathematics Items

Use the balance scales below to answer question 14.

Jamal = 4 + Kim   Kim   = Shana – 6   Shana =   8
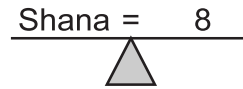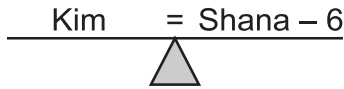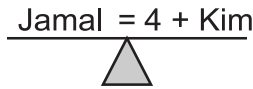
14. The balance scales show that Jamal has 4 more sticks of gum than Kim. Kim has 6 fewer sticks of gum than Shana. Shana has 8 sticks of gum. How many sticks of gum does Jamal have?

   A.   4

 * B.   6

   C.   10

   D.   14

---

15. In Alvin's sock drawer, there are 6 blue socks, 4 brown socks, and 8 black socks. Without looking, Alvin pulls out a brown sock and puts it on. What is the probability that Alvin will pull out another brown sock on the next pull?

   A. $\dfrac{4}{9}$

   B. $\dfrac{5}{17}$

   C. $\dfrac{2}{9}$

 * D. $\dfrac{3}{17}$

16. Mrs. McKinney is packing boxes and uses 4 feet of packing tape per box. She has 12 yards of packing tape left to tape her remaining boxes. How many boxes will Mrs. McKinney be able to tape with the remaining tape?

   A.   4 boxes

 * B.   9 boxes

   C.   12 boxes

   D.   36 boxes

17. Erica's rose garden has 16 bushes, 9 of which are red. The same proportion exists in her neighbor's garden of 64 rosebushes. How many red rosebushes does Erica's neighbor have?

   A.   16

   B.   25
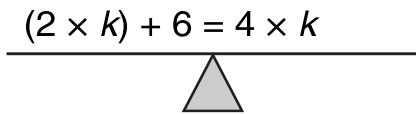
   C.   27

 * D.   36

18. Ashley's teacher told her to draw a polygon based on these rules:

   - It has no right angles.
   - Two sides are congruent.
   - Only two sides are parallel.

   Which polygon should Ashley draw?

   A.   square

   B.   rhombus

 * C.   trapezoid

   D.   rectangle
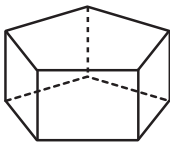
Use the balance scale below to answer question 19.

$$(2 \times k) + 6 = 4 \times k$$

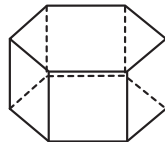19. Use the balance scale above to help you solve for k.

    A. $k = 2$

    * B. $k = 3$

    C. $k = 4$

    D. $k = 6$

20. Mrs. Wright began describing a 3-dimensional object based on its geometric shape. She said, "It has 6 faces, 8 vertices, and 12 edges." Which object below is she describing?

    A.   B.
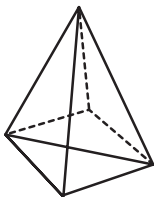
    C.   * D.
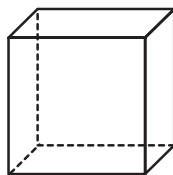
Use the math sentences below to answer question 21.

Kara's Bike Riding

| Monday $= 3 \times$ Tuesday |
| Wednesday $= \dfrac{1}{2}$ of Tuesday |

21. Use the math sentences in the box above to find out how many blocks Kara rode her bicycle on Monday, if she rode 2 blocks on Wednesday.

    * A.   12 blocks

    B.   8 blocks

    C.   6 blocks

    D.   2 blocks

Use the figure below to answer question 22.
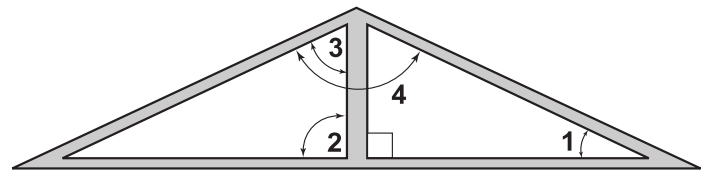
22. A construction worker looks at the plans for the roof of a house and estimates the measure of an angle to be 30 degrees. If the worker was looking at the diagram shown above, which angle did he estimate?

    * A.   1

    B.   2

    C.   3

    D.   4

Use the information below to answer question 23.

Umbrella: $6.50

Hat: $9.99

Gloves: $8.25

Scarf:
$7.75

23. Mike and his sisters have saved $19.00 to buy gifts for their mother. Use estimation to decide which combination of the items above comes closest to using all their savings without going over.

   * A.   gloves and hat

   B.   scarf and gloves

   C.   umbrella and scarf

   D.   hat and umbrella

24. A bag contains 3 blue marbles, 3 green marbles, 4 yellow marbles, and 4 red marbles. Without looking, Jackie reaches in the bag and removes 2 blue, 1 green, 1 yellow, and 3 red marbles without replacing them. What color marble is she **most** likely to draw if she reaches in for 1 more marble?

   A.   red

   B.   blue

   C.   green

   * D.   yellow

Use the information below to answer question 25.

Drinking Glass
(750 ml of water)

Cereal Bowl
(500 ml of milk)

Tea Cup
(125 ml of tea)

Lemonade Pitcher
(1000 ml of lemonade)

25. Examine the containers above. Which container holds half a liter of liquid?

    A. Tea Cup

* B. Cereal Bowl

    C. Drinking Glass

    D. Lemonade Pitcher

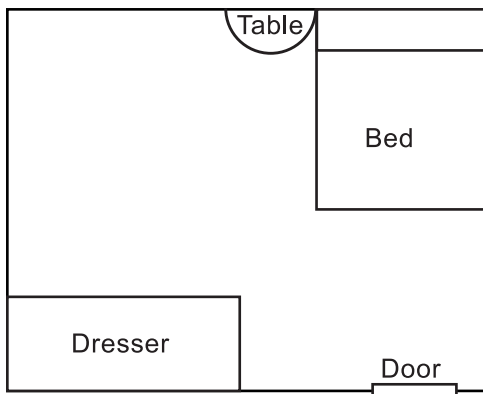**Use the figures below to answer question 26.**
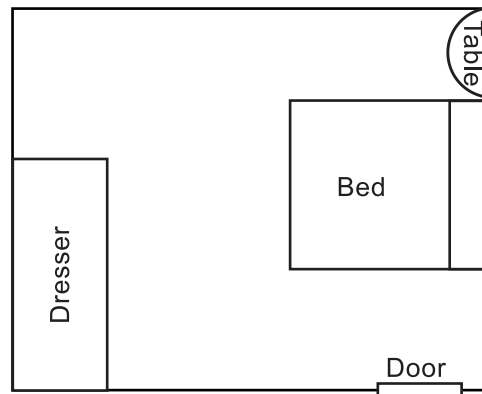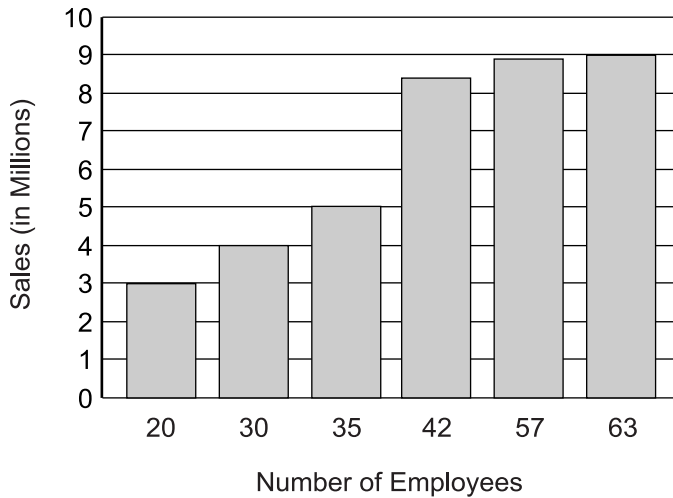

Figure 1　　　　　　　　　　　**Figure 2**

26. Tanya used the paper cut-out furniture shown above to help her rearrange her room. What type of transformation is the new position of the cut-out furniture in Figure 2?

* A. turn

    B. slide

    C. reflection

    D. tessellation

Use the bar graph below to answer question 27.

Walco's Sales vs. Number of Employees

27. The manager at Walco's has charted his company's sales as they relate to the number of employees. According to his bar graph above, how much would Walco's expect to make in sales if there were 39 employees?

   A.   7.1 thousand

 * B.   7.1 million

   C.   8.5 thousand

   D.   8.5 million

28. Lilly has a toy car. When she winds it up, it travels 4 feet, then stops. She starts at one end of her driveway and lets the toy car travel a total of 44 feet. Which set of numbers below includes some of the distances, in feet, at which Lilly will have to rewind the toy car? (Distances are from the beginning of her driveway.)

   A.   12, 22, 36

   B.   14, 24, 34

 * C.   20, 28, 36

   D.   22, 26, 34

29. There are 60 sixth-grade students and 60 seventh-grade students at Amelia Middle School. If $\frac{3}{4}$ of each grade participated in the school's summer camp, how many students participated?

   A.   45

   B.   75

 * C.   90

   D.   160

Use the table below to answer question 30.

Inches of Rainfall in Oak Valley		
	Year	
	1997	2001
March	8	6
April	12	10
May	10	11
June	7	6
July	5	2
August	1	0.5

30. Which month shown in the table above has the **most** rainfall for 1997 and 2001 combined?

   A.   May

 * B.   April

   C.   March

   D.   August

9

PART II   Released Mathematics Items

Use the table below to answer question 31.

An Astronomy Club's Survey	
Hour	**Number of Meteors**
12 A.M. to 1 A.M.	57
1 A.M. to 2 A.M.	74
2 A.M. to 3 A.M.	81
3 A.M. to 4 A.M.	162
4 A.M. to 5 A.M.	127
5 A.M. to 6 A.M.	99

31. The table above shows the number of meteors that appeared in the sky during each hour of an annual meteor shower. What is the average number of meteors that an observer would expect to see in any given hour during this meteor shower?

   A.　57

 * B.　100

   C.　129

   D.　162

Use the graphic below to answer question 32.
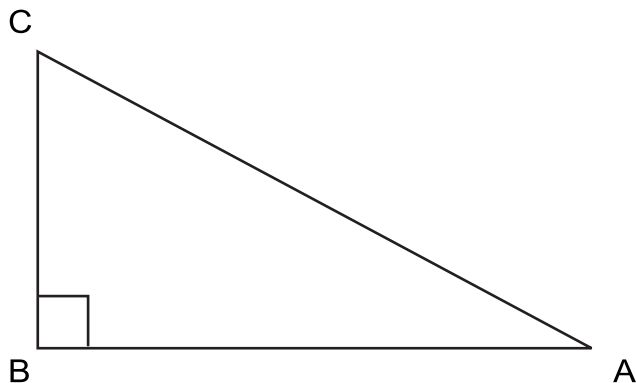
32. Which of the equations is a true statement about the angles in ΔABC above?

   A.　$\angle A > \angle C$

   B.　$\angle C > \angle B$

   C.　$\angle A = \angle B$

 * D.　$\angle B = \angle A + \angle C$

Use the chart below to answer question 33.

Time Ben Worked on His Science Project

Days	Times (P.M.)
Monday	6:25 – 7:45
Tuesday	4:30 – 5:45
Wednesday	5:20 – 6:05
Thursday	7:40 – 8:10

33. The chart above shows the times that Ben worked on his science project. How much time did Ben spend on his project?

   A.　110 minutes

   B.　170 minutes

   C.　200 minutes

 * D.　230 minutes

Use the number line below to answer question 34.
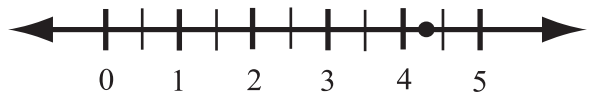
34. The point indicated on the number line above is closest to which number?

   A.　3.9

   B.　4.0

 * C.　4.3

   D.　5.0

35. Solve for m in the equation below.

$$45 - m = 2 \times m$$

   A.　$m = 2$

 * B.　$m = 15$

   C.　$m = 20$

   D.　$m = 45$

PART II   Released Mathematics Items

Use the chart below to answer question 36.

**Travel Distance and Time
to My Friends' Homes**

| Friend	Distance Traveled	Travel Time
Ellen	$1\frac{1}{2}$ miles	$22\frac{1}{2}$ minutes
Whitney	2 miles	30 minutes
Darlene	$2\frac{1}{2}$ miles	$37\frac{1}{2}$ minutes
Ming	3 miles	45 minutes
Brandi	$4\frac{1}{2}$ miles	?

36. Cassandra created the chart above. About how much time would it take Cassandra to travel to her friend Brandi's house?

   A. $22\frac{1}{2}$ minutes

   B.   60 minutes

* C. $67\frac{1}{2}$ minutes

   D.   75 minutes

37. Tad's father sells vacuum cleaners and earns 30% of his total sales. He sold 4 vacuum cleaners last week at $500 each. How much money did he earn?

   A. $ 150.00

   B. $ 300.00

* C. $ 600.00

   D. $2,000.00

Use the bar graph below to answer question 38.

Baskets Per Game
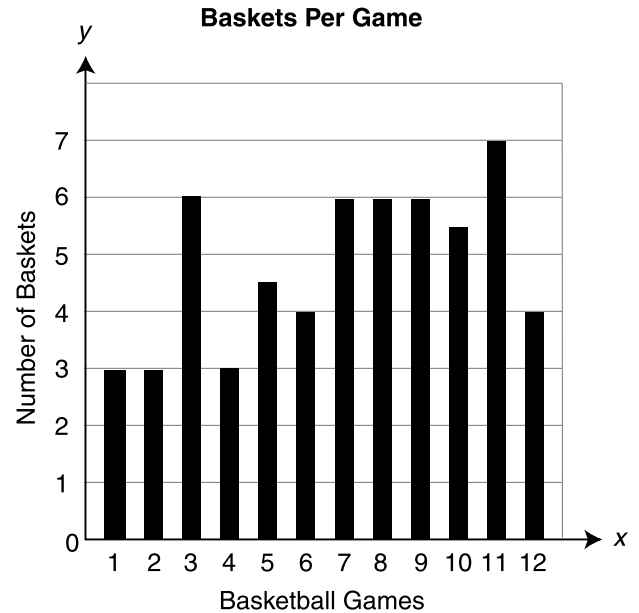
38. Latoya created a bar graph to represent the number of baskets she made at each of her basketball games. Based on the mode, how many baskets is Latoya **most** likely to make in any single game during the entire basketball season?

   A.   4

   B.   5

* C.   6

   D.   7

39. A shallow creek runs behind Dawn's house. Dawn and her friends want to lay a board across the creek. The board is 6 feet long. Which of the following widths of the creek will the board reach all the way across?

   A.   3 yards

   B.   4 yards

* C.   63 inches

   D.   75 inches

Use the bar graphs below to answer question 40.
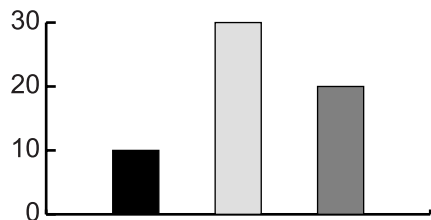
Graph 1
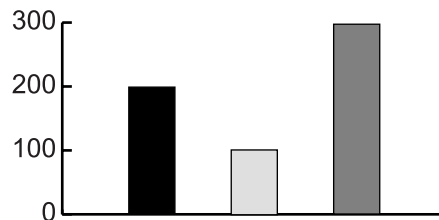
Graph 2

Graph 3

Graph 4

40. Which of the bar graphs above would be used to compare the populations of cities?

    A.   Graph 1

    B.   Graph 2

    C.   Graph 3

  * D.   Graph 4

MATHEMATICS OPEN-RESPONSE ITEM A

A.   Students were asked to select two **different** pattern blocks, as shown above, and describe the similarities and differences between the two. Use your pattern blocks to help you.
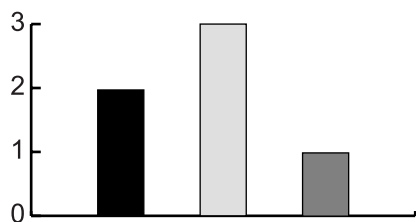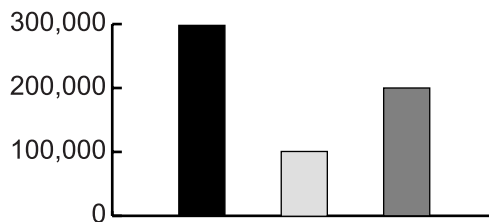
Betty's List for a Rhombus ⟋⟋ and a Trapezoid ▱

Similarities	Differences
• both are polygons with 4 sides, or are quadrilaterals	• a rhombus has 4 equal sides and a trapezoid does not
• both have 2 diagonal lines	• a rhombus has 2 lines of symmetry and a trapezoid has 1 line of symmetry
• both have the same total sum of their interior angles	• a rhombus has 2 sets of parallel lines and a trapezoid has 1 set of parallel lines
• both have 2 acute and 2 obtuse angles	

Above is Betty's list of similarities and differences for her selections, the rhombus and the trapezoid. Select two of your pattern blocks that are **different** from Betty's.

1.   Make a list of two similarities for each of your pattern blocks.

2.   Make a list of two differences for each of your pattern blocks.

BE SURE TO LABEL YOUR RESPONSES 1 AND 2.

RUBRIC FOR MATHEMATICS OPEN-RESPONSE ITEM A

SCORE	DESCRIPTION
4	The student earns 4 points. The response contains no incorrect similarities, differences or statements.
3	The student earns 3 points.
2	The student earns 2 points.
1	The student earns 1 point or shows some minimal understanding.
0	The response is incorrect or irrelevant.
B	Blank – No Response. A score of "B" will be reported as "NA" (No Attempt – Zero Score).

MATHEMATICS OPEN-RESPONSE ITEM B

Two Types of Transportation to Little Rock

	Train	Car
Speed (mph)	?	60
Travel time (hours)	9	?
Distance (miles)	450	450

B. Xavier's family needs to travel from St. Louis, Missouri, to Little Rock, Arkansas. They want to compare the travel time of taking the train with that of driving their car. The distance between the two cities is **approximately** 450 miles.

1. What is the average speed, in miles per hour, of the train? Show all your work or explain your answer.

2. Compare the amount of time it takes the car and the time it takes the train to reach Little Rock. How much longer will the slower form of transportation take to reach Little Rock? Show all your work or explain your answer.

BE SURE TO LABEL YOUR RESPONSES 1 AND 2.

RUBRIC FOR MATHEMATICS OPEN-RESPONSE ITEM B

SCORE	DESCRIPTION
4	The student earns 4 points. The response contains no incorrect work.
3	The student earns 3 – 3 ½ points.
2	The student earns 2 – 2 ½ points.
1	The student earns ½ – 1 ½ points or shows some minimal understanding.
0	No understanding is shown.
B	Blank – No Response. A score of "B" will be reported as "NA" (No Attempt – Zero Score).

MATHEMATICS OPEN-RESPONSE ITEM C

High Temperatures for April 1–10

Day	1	2	3	4	5	6	7	8	9	10
ºF	56	65	69	48	48	56	58	70	71	56

C. Mrs. Garby's class recorded the high temperature each day for ten consecutive days.

1. What is the mode of this set of data? Explain your reasoning.

2. Mrs. Garby asked Jamie, "What is the range of this set of data?" Jamie's answer was 23. Was he correct? Explain your reasoning.

3. To the nearest tenth, find either the median or mean of this set of data. Show all your work or explain your answer.

BE SURE TO LABEL YOUR RESPONSES 1, 2, AND 3.

RUBRIC FOR MATHEMATICS OPEN-RESPONSE ITEM C

SCORE	DESCRIPTION
4	The student earns 4 points. The response contains no incorrect work.
3	The student earns 3 – 3 ½ points.
2	The student earns 2 – 2 ½ points.
1	The student earns ½ – 1 ½ points or shows some minimal understanding. Example: Correct Mean or Median is found but not labeled. No correct work in Part 1 and/or Part 2. Example: Correct procedure used for some measure of central tendency, but incorrect name is listed.
0	No understanding is shown.
B	Blank – No Response. A score of "B" will be reported as "NA" (No Attempt – Zero Score).

Solution and Scoring

Part 1:   (1 point possible)

Answer: ½ point for correct answer of 56 or 56°.
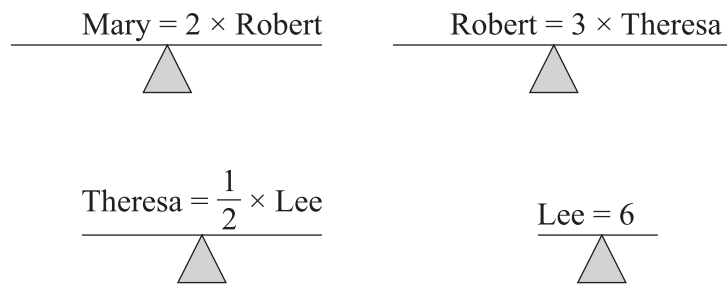
AND

Work: ½ point for correct procedure to find mode shown or explained.

Give credit for the following or equivalent:
- "The mode is 56° because it is the temperature repeated the most," or
- "There are three 56's."

MATHEMATICS OPEN-RESPONSE ITEM D

Ages of Four Students

Mary = 2 × Robert   Robert = 3 × Theresa

Theresa = $\frac{1}{2}$ × Lee   Lee = 6
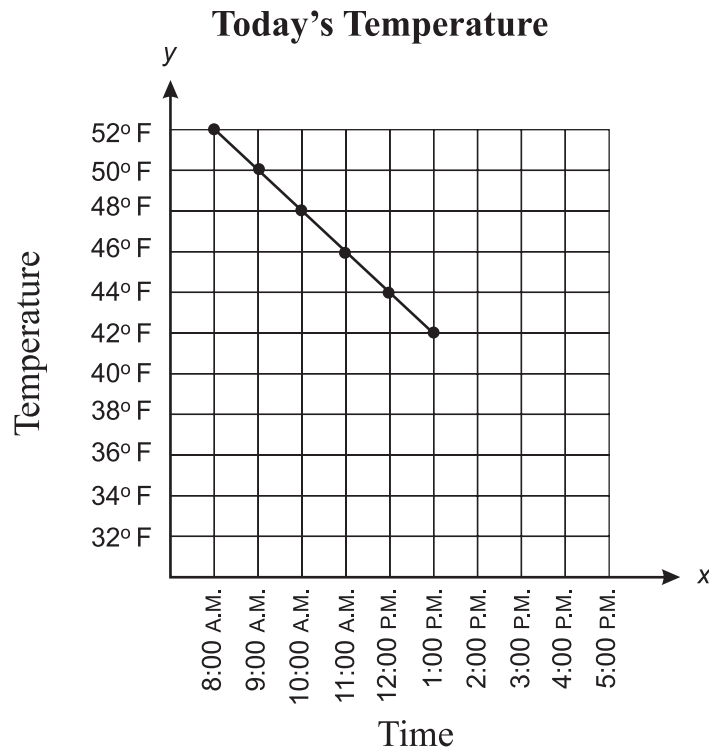
D. Examine the balance scales above.

1. How old is Theresa?

2. How old is Mary?

3. Describe how you determined Theresa's and Mary's ages.

BE SURE TO LABEL YOUR RESPONSES 1, 2, AND 3.

RUBRIC FOR MATHEMATICS OPEN-RESPONSE ITEM D

SCORE	DESCRIPTION
4	The student earns 4 points. The response contains no incorrect work.
3	The student earns 3 – 3 ½ points.
2	The student earns 2 – 2 ½ points.
1	The student earns ½ – 1 ½ points or shows some minimal understanding.
0	No understanding is shown.
B	Blank – No Response. A score of "B" will be reported as "NA" (No Attempt – Zero Score).

MATHEMATICS OPEN-RESPONSE ITEM E

Today's Temperature

E. A morning thunderstorm brought a cold front to the area, so the temperature began to change rapidly. The students plotted their data as shown on the graph above.

1. Assuming the temperature change will continue at the same rate, predict what the temperature will be at 5:00 P.M. Explain how you found your answer.

2. Describe the relationship between the time and the temperature over the course of the six hours as shown in the graph.

BE SURE TO LABEL YOUR RESPONSES 1 AND 2.

RUBRIC FOR MATHEMATICS OPEN-RESPONSE ITEM E

SCORE	DESCRIPTION
4	The student earns 4 points. The response contains correct label of "Degrees" in Part 1 and contains no incorrect work.
3	The student earns 3 points.
2	The student earns 2 points.
1	The student earns 1 point or shows some minimal understanding.
0	No understanding is shown.
B	Blank – No Response. A score of "B" will be reported as "NA" (No Attempt – Zero Score).