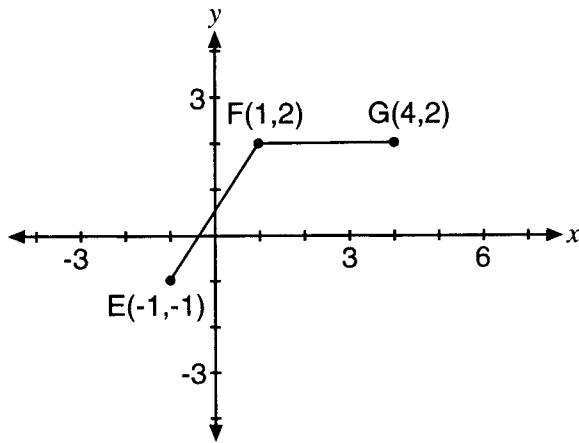# meap

Michigan Educational Assessment Program

# High School Test in Mathematics

Released Items

Spring 2001

3   What would the coordinates of point H be in order for points E, F, G, and H to form a parallelogram?

A   (2,−1)   **B**   (3,−1)

C   (6,−1)   **D**   (−1,2)

4   Jupiter is approximately 780 million kilometers away from the sun. If light travels at a rate of about 3.0×10^5 km/sec, about how long does it take the light from the sun to reach Jupiter?

A 2.34×10^{14} seconds

B 2.34×10^8 seconds

C 2.60×10^3 seconds

D 2.60×10^{-1} seconds

6   Marcia compared the cost of renting a word processor from two different companies. Both companies charged a deposit plus a daily fee. Marcia made a graph to compare the rental fees.
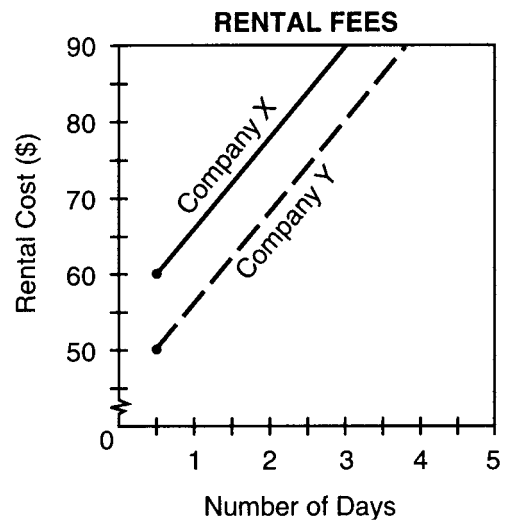
Based on the information in the graph, which statement is **TRUE**?

A   Company X charges a higher daily fee.

B   Company Y charges a higher deposit.

C   Both companies charge the same daily fee.

**D**   Both companies charge the same deposit.

8
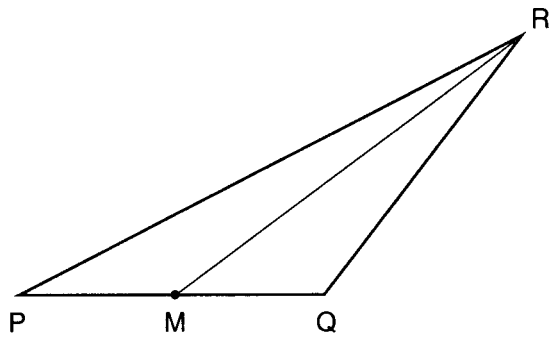
If M is the midpoint of $\overline{PQ}$, which statement is true about the relationship between triangle PMR and triangle QMR ?

A   Their areas are equal.

B   They are similar.

C   They are congruent.

D   Their perimeters are equal.

17   If you double the lengths of the sides of a square, the area of the square _____.

A   remains the same

B   becomes twice as large

C   becomes four times as large

D   becomes eight times as large

19   Which expression represents the area of the living room below?
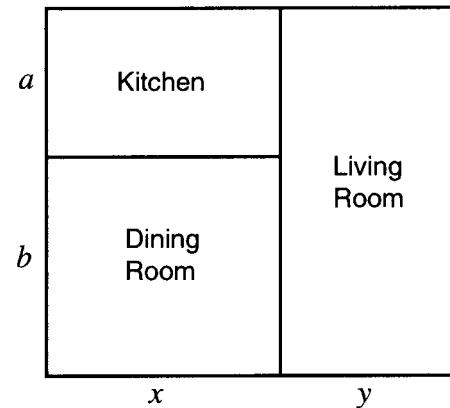
A $(y-x)(a+b)$ B $y(a+b)$

C $(x+y)(a+b)$ D $y(b-a)$

20   One number is selected at random from the set of numbers below.

$$.25 \quad 1\frac{1}{2} \quad 3.2 \quad \frac{7}{8} \quad \frac{9}{5}$$

What is the probability that the reciprocal of the number selected will be greater than 1 ?

A $\frac{2}{5}$ B $\frac{3}{5}$

C $\frac{3}{1}$ D $\frac{2}{1}$

23   Four firefighter teams raced in a field day event. Their times (in minutes) were 2.207, 1.720, 2.072, and 1.207. If the sponsors of **EACH** of the losing teams donated one dollar to charity for every one-thousandth of a minute difference between the winning time and their team's time, how much did the sponsors of the **losing teams** donate altogether?

A $513   B $865

C $1000   D $2378

33) 3 Points

In order to continue a new expressway, the highway department needs to build a tunnel through a mountain. To accomplish this, they need to know the distance from point P to point Q. The workers placed markers at points P, Q, R, S, and T, and measured the distances marked in the diagram.
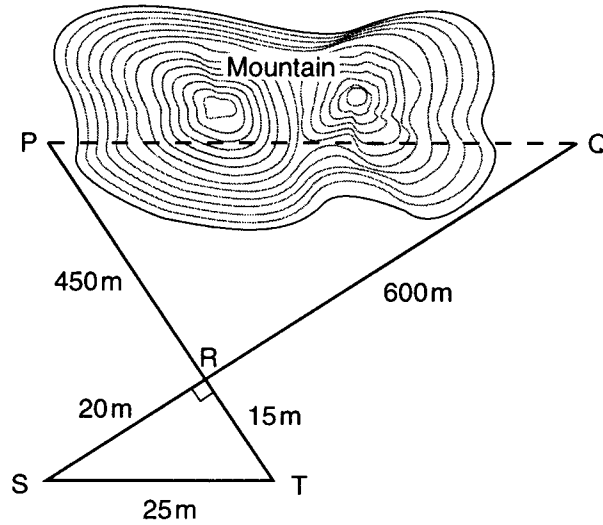
Note: Drawing is not to scale

What is the distance from point P to point Q? Provide the work that shows how you arrived at your answer.

35)   3 Points

Amy has test scores of 75, 89, 94, and 86 from four 100-point tests. The final exam counts as two tests and therefore is worth 200 points. Can Amy bring her average up to 90% when she takes the final exam? If so, what score must she get? If not, explain why not. Provide a complete explanation to show how you arrived at your answer.

35a)   Exemplar

1. $90\% \longrightarrow 0.90$

$$\frac{75 + 89 + 94 + 86 + x}{4(100) + 200} = 0.90 \longrightarrow \frac{90\%}{100\%}$$

$$344 + x = 0.90(600)$$

$$x = 540 - 344$$

$$x = 196$$

Yes, 196 points, or more, will bring her average up to 90%, because :

$$\frac{344 + 196}{600} = 0.90 \text{ or } 90\%$$

OR

2. $$\frac{x + 75 + 89 + 94 + 86}{6} = 90$$

$$x + 344 = 6(90) = 540$$

$$x = 196$$

OR

3. Total score will equate to $4 \times 100 + 200 = 600$
90% average would require $90\% \times 600 = 540$ points
$75 + 89 + 94 + 86 = 344$ current points on 4 tests
$540 - 344 = 196$ points required on final exam

OR

4. $-15 \qquad -1 \qquad \textcircled{90} \qquad +10 \qquad +10 \qquad = +4 \text{(extra points)}$
$75 \quad 89 \quad 94 \quad 86 \quad 100 \quad 100 \quad \therefore 200 - 4 = 196$

36)   **2 Points**

Sixteen students in a class were asked how much television they watched last week. The dot frequency diagram shows their responses.

Number of Hours Watching Television
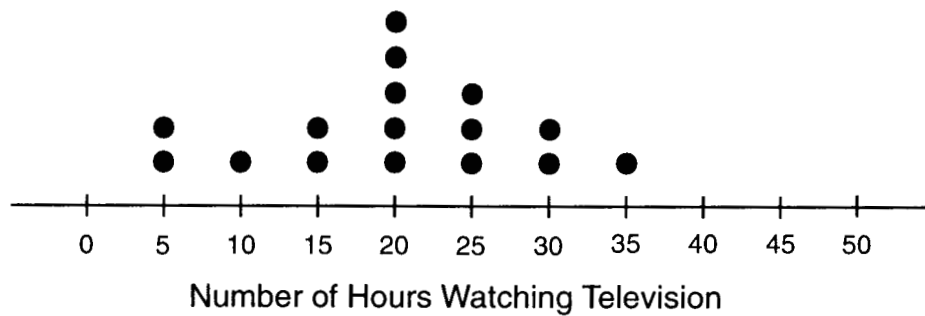
Describe the interval from minimum to maximum viewing time in hours.

A   Describe the interval in words.

B   Describe the interval as an inequality using mathematical notation.

37)   4 Points

Manny is offered the choice of the following two pay scales at his new job.

(1)   He will receive $5 per hour regardless of the number of hours he works.

(2)   He will receive $4 per hour for each hour he works up to and including 30 hours per week, and $7 per hour for each hour he works over 30 hours per week.

A   Create a table to show each pay scale. Begin the table at 20 hours of work for each pay scale and include entries for each additional five hours of work. Then indicate the pay scale, (1) or (2), from which Manny can make the most money.

B   Will Manny make the most money from the answer you indicated in Part A all the time? If not, how long must he work before one pay scale is better than the other? Justify your answer.