New England Common Assessment Program

Student Work Samples
2009

Grade 11

Mathematics

13

$2 < x < y$

⓭ $z > x > y$

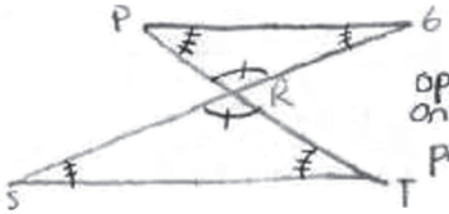
14 $PR = 6$
$QR = 8$
$SR = 12$

$\triangle RRQ \cong \triangle TRS$

$\frac{PQ}{TR} = \frac{QR}{SR}$

$\frac{6}{x} = \frac{8}{12}$

$72 = 8x$
$9 = x$



opposite Angle on transversal thru parallel lines are ≅

$\overline{RT} = 9$

14

$2T = 9$

14

$\overline{PR} = 6$ $\overline{QR} = 8$

$\overline{SR} = 12$ $\overline{TR} = 14$

14

L=16
Just double the numbers

15 $2k+1$

15 $3K - (K-1)$

15

Step K = previous line segment + 2

15

$$k = (k-1) + 2$$

16

$\frac{5}{2}$

16

(0,5)

up 10 over four

(4,15)

$\frac{10}{4}$

16

$(4, 15)\ (0, 5)$

$$m = \frac{5-15}{0-4} = \frac{-10}{4} = \frac{-5}{2}$$

16 The slope of $\overleftrightarrow{KL}$ is 32°

17

$\frac{4.5}{2} = 2.25$

vertex = (2.25, 400)

He should charge \$2.25 for each loaf of bread.

17

2.5 ÷ 2 = 1.25

$ 1.25

18 abont 57% of the teenagers surveyed

18

56%

18 20%

⓲ ,38 %

19 Every line drawn from the center to the edge of a circle is equal to every other line of the same creation. Therefore $\overline{SP}$ and $\overline{PT}$ are equal. This means the triangle is at least isosoleces, meaning $\angle PST$ and $\angle PTS$ are equal. If $\angle SPT$ is 60° and the other two angles are equal, they have to be 60° also. Triangles can only have 180° of interior angles. This makes $\triangle SPT$ an equilateral, and all sides are equal.

19 If $\overline{PS}$ and $\overline{PT}$ are radii then they are congruent, if $\overline{PS}$ and $\overline{PT}$ are congruent then $\angle S = \angle T$ If $\angle S = \angle T$ and $\angle P$ is $60°$ then $\angle S$ and $\angle T$ must be $60°$. which means ΔPST is an equilateral, then $\overline{ST}$ must be congruent to $\overline{PT}$

19 Since P is the center, of the circle, then $\overline{PT} \cong \overline{PS}$ because all radii of a Circle are $\cong$. This makes the sides $\overline{PS}$ and $\overline{PT}$ of $\triangle PST$ $\cong$ as well. Therefore, $\triangle PST$ is an equilateral triangle, making $\overline{ST} \cong \overline{PT}$.

19 If m∡SPT = 60 then all the angle measures = 60. due to the theroM that states all the measures of the interior angles added together equal 180. Since all the angles are congruent, then all the sides are equal.

19

$\overline{ST}$ and $\overline{PT}$ are both the radius of the circle so they are equal

20

$\frac{1}{4} \cdot \frac{6}{1} \cdot \frac{2}{1} =$

$3 \cdot 72 \cdot 24 = \frac{5184}{144}$

$$\begin{array}{r} {}^{1}{}^{2}36\,BF \\ \times\ 3.40 \\ \hline 1440 \\ 10800 \\ \hline 122.40 \end{array}$$

$122.40

20 The pine board costs $122.40. This is because the pine board is 3 inches thick, therefore the cost of each board foot is tripled. I then took that cost, $10.20, and multiplied it by 12 because the pine board contained 12 board feet.

20

$122.40

20

$6 \cdot 2 \cdot \frac{1}{4} = 3$

$1 \cdot 1 \cdot \frac{1}{12} = \frac{1}{12}$

$3 \cdot \frac{12}{1} = 24$ bd ft

$24 \cdot 3.40 = \$81.60$

20

$V = 5184\ in^2$

5184×3.4

$17,625.60

20

$3.40 \cdot \frac{1}{4} = .85$

$3.40 \cdot 6 = 20.40$

$3.40 \cdot 2 = 6.80$

$6.80 + .85 + 20.40 = 28.05$

$28.05

21

A scatter plot graph because there is no definite corilation between weight and push-ups, so a line graph would show nothing useful. The bar graph could show a trend w/ weight v. push-ups, but not as effectivly as a scatter plot w/ y-axis being push-ups and x-axis weight.

21

Coach Murphy should use a scatter plot to display his data because scatter plots allow you to plot data easily and determine any trends. On the other hand, Line graphs are usually for sets of data that occur over time, and bar graphs are not usually used for data sets with two numeric variables. For these reasons, Coach Murphy should use a scatter plot.

21

A scatter plot would be most useful, because you can plot how many pushups someone can do based on their weight.

21

Bar Graph

22

a.) Creative Caps = $5x+50$

$5(15)+50=$
$75+50=$
$\$125.00$

b.)

$5x+50$

c.)

15 Hats
$6(15)+30=120$ ✓
$5(15)+50=125$ ✗

20 Hats
$6(20)+30=150$ ✓
$5(20)+50=150$ ✓

18 Hats
$6(18)+30=138$ ✓
$5(18)+50=140$ ✓

21 Hats
$6(21)+30=156$ ✗
$5(21)+50=155$ ✓

He should buy the hats from Creative Caps if he buys 21 or more hats.

22

A $125

$50 + ($5 × 15)

B $50 + 5x$

C $50 + 5x = 30 + 6x$

$-5x \qquad -5x$

$50 = 30 + x$

$-30 \quad -30$

$20 = x$

22

A. $50 + 5(15)$

Creative caps charges \$125 for 15 caps

B. $50 + 5x$

C. $50 + 5(10) = 50 + 50 = \$100$ — creative

$30 + 6(10) = 30 + 60 = \$90$ - Happy

Creative Caps costs more so Happy hats costs the least to make hats.

22

A.) $50 + (5 \cdot 15)$

$\$125$

B.) $30 + (6 \cdot x)$

C.) $30 + (6 \times 45) = 300$

$50 + (5 \times 45) = 275$

$30 + (6 \times 46) = 306$

$50 + (5 \times 46) = 280$

When 46 caps are being ordered, you should switch to Creative caps, because it becomes less expensive after 45 caps.

46+ caps

22

creative caps

$50.00 + $5.00 per cap

x 15 caps

$75 for 15 caps

$5n + 50 = x$

creative caps - should order when needed all at one time so he doesn't get charged more.

23

a.) $.7 \times 40 = 28$

\$28

b.) $.8 \times 40 = 32$

$.9 \times 32 = 28.80$

It is less expensive to buy the game at the hobby shop because there it is \$28 and at the dept. store it is \$28.80

c.) $18 = \frac{9}{10} x$

$\frac{180}{9} = x$

$20 = x$

the regular price is \$25.

$20 = \frac{8}{10} y$

$\frac{200}{8} = y$

$25 = y$

23

a) 30% of 40

$12

discounted price = $28

b) 20% of 40

10% of 20% of 40

$8

10% of $32

$3.20

$\begin{array}{r} {}^{2}\cancel{3}{}^{1}\cancel{2}.00 \\ -3.20 \\ \hline 28.80 \end{array}$

discounted price = $28.80

It is less expensive at the hobby shop

c) $18

$\frac{90}{100} = \frac{18}{x}$ $\quad \frac{9}{10} = \frac{18}{x}$

$9x = 180$

$x = 20$

$\frac{80}{100} = \frac{20}{x}$ $\quad \frac{4}{5} = \frac{20}{x}$

$4x = 100$

$x = 25$

$\boxed{\$25}$

23

a. 40 x .3 = 12

40 - 12 = 28

b. 40 x .2 = 8

40 - 8 = 32 x .1 = 3.2

32 - 3.2 = 28.8

U.S. winner Hobby Shop!

c. $25

23

(a) $40 x .3 $28

$40 - 12

40
.3
12.0

(b) $32 $32 - 3.2

$29.8

It is less expensive at the hobby shop

40
.2
8.0

32
.1
3.2

(c) $25
.2
5.0

$20

$20 - $2 = 18$

$20
.1
2.0

The regular price was $25

23

a. $40 reg. price.

$$\begin{array}{r} 40 \\ \times .30 \\ \hline 00 \\ 1200 \\ \hline 12.00 \end{array} \qquad \begin{array}{r} 40 \\ -12 \\ \hline \$28 \end{array}$$ discounted.

b.

$$\begin{array}{r} 40 \\ \times .20 \\ \hline 00 \\ 800 \\ \hline 8.00 \end{array} \qquad \begin{array}{r} 40 \\ -8 \\ \hline 32 \end{array} \qquad \begin{array}{r} 32 \\ \times .10 \\ \hline 00 \\ 320 \\ \hline 3.20 \end{array} \qquad \begin{array}{r} 32.00 \\ -3.20 \\ \hline 28.80 \end{array}$$

it is less expensive to buy it at the hobby shop.

c.

$$\begin{array}{r} 18 \\ \times .10 \\ \hline 00 \\ 180 \\ \hline 1.80 \end{array} \qquad \begin{array}{r} 18 \\ +1.80 \\ \hline 19.80 \end{array} \qquad \begin{array}{r} 19.80 \\ \times .20 \\ \hline 0000 \\ 39600 \\ \hline 3.96 \end{array} \qquad \begin{array}{r} 19.80 \\ +3.96 \\ \hline 23.76 \end{array}$$

$23.76 reg. sale price

23

a: $26.67

b: It's less expensive to buy the chess game at the hobby shop because they take more money out all together during the 30% off, rather than after the discounted price.

c: $25

20% off 25 dollars is $5 off.
Additional 10% off is $2 off.
$25 - $7 = $18

23

a) $28.00

b) it is less expensive for Greg to get the game at the hobby shop

c) The regular price was about $30, I know this because I just did basically the same problem before this question and it makes sense

23

a. $40 \div .3 = 2.4$ $\quad 40 \times 2.4 = 9.6$

$40 - 9.6 = 30.4$ $\quad \boxed{\$30.40}$

b. It becomes 30% on Saturday, so the prices are equal.

c.
$$\begin{array}{r} 18.00 \\ +\ 2.40 \\ \hline 26.40 \end{array}$$

$\boxed{\$26.40}$