2011 MCAS Portfolio Appeal
WORK DESCRIPTION for High School Competency Portfolio in MATHEMATICS

(Attach one WORK DESCRIPTION to each piece in the portfolio.)

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The Mathematics competency portfolio must include:
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Please indicate the strand and learning standard documented in the attached work sample:

- [ ] Number Sense and Operations 10.N.1 10.N.2

ON THE ATTACHED PIECE:

What score did the student receive? (Level of Accuracy = 100 %)

How much was done independently by the student? (Level of Independence = 100 %)

What type and how much assistance, coaching, and prompting did the student receive on the attached piece?

REVIEW DEFINITION OF CONGRUENCY

What was the student asked to do in order to complete the attached piece (i.e., what was the assignment)?

IDENTIFY CONGRUENT FIGURES AND CORRESPONDING PARTS OF CONGRUENT TRIANGLES

Self-evaluation (optional) - continue on back, if needed:
Look at all the figures. Find the four pairs of congruent figures. List each pair of figures using appropriate symbols.

1. \( \angle ABC = \angle XYZ \)
2. \( \triangle MNP = \triangle TVU \)
3. \( \triangle AGH = \triangle ABC \)
4. \( \triangle MAP = \triangle UVX \)

Triangle \( \triangle ACB \) and Triangle \( \triangle DFE \)
are congruent.

Please label all 6 of the corresponding parts on Triangle \( \triangle DFE \)

Student Comments: *IT IS EASY*
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How much was done independently by the student? (Level of Independence = 90%)

What type and how much assistance, coaching, and prompting did the student receive on the attached piece?

**DEFINITION OF SIMILARITY APPLIED TO TRIANGLES**

What was the student asked to do in order to complete the attached piece (i.e., what was the assignment)?

**IDENTIFY SIMILAR TRIANGLES USING THE DEFINITION, FIND CORRESPONDING SIDES OF SIMILAR TRIANGLES.**

Self-evaluation (optional) - continue on back, if needed: [Evidence]
Similar Triangles

Which triangles are similar?

Pair 1: No because corresponding sides are not proportional.

Pair 2: No because corresponding angles are not congruent.

Pair 3: Yes because corresponding sides are in proportion.

4) \( \triangle ABC \) is similar to \( \triangle DEF \).
   Find side \( DF \).

   \( \frac{FD}{CA} = \frac{DE}{AB} \)
   \( \frac{FD}{5} = \frac{6}{4} \)
   \( 4FE = 30 \)
   \( FE = 7.5 \)

   Notes: Student comment: Fairly easy.

5) Find side \( AE \).

   \( \frac{DE}{AE} = \frac{BC}{10} \)
   \( 100 = 8AE \)
   \( AE = 12.5 \)

   \( AF = 12.5 \)
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What type and how much assistance, coaching, and prompting did the student receive on the attached piece? USE OF A CALCULATOR, A BRIEF REVIEW OF RATIO AND PROPORTIONS

What was the student asked to do in order to complete the attached piece (i.e., what was the assignment)? FIND THE LENGTHS OF CORRESPONDING SIDES OF SIMILAR POLYGONS USING PROPORTIONS

Self-evaluation (optional) - continue on back, if needed: ON EVIDENCE
Are the polygons similar? If they are, write a similarity statement (a proportion) and give the similarity ratio.

1. A rectangle and a rectangle with sides 27, 18, 3.5, 4.3, 6, 8.4, 2.5, 4.5.

2. Triangles with sides 7.5, 12, 8, 10.

3. The polygons are similar. Find the values of the variables.

4. Triangles with sides 8, 10, 12, 15.

5. Trapezoids with sides 16, 2, 5, 10.

6. Trapezoids with sides 12, 15, 2, 10.

Student Comment: It is easy but it long.
(1) \[ \frac{36}{24} = \frac{24}{18} \]

Yes, they are similar

Similarity ratio

\[ \frac{36}{24} = \frac{9}{6} = \frac{3}{2} \]

\[ \frac{24}{18} = \frac{3}{2} \]

(2) \[ \frac{8}{3} \]

\[ \frac{6}{3} = \frac{2}{1} \]

\[ 37.8 \approx 8 \]

Yes, they are similar

Similar ratio

\[ \frac{3.5}{2.5} = \frac{1.4}{1} \]

\[ \frac{2.4}{1} = \frac{1.4}{1} \]

(3) \[ \frac{7}{5} \]

\[ \frac{7}{5} = \frac{1.4}{1} \]

120 = 120

Yes, they are similar

Similar ratio

\[ \frac{16}{12} = \frac{4}{3} \]

\[ \frac{8}{6} = \frac{4}{3} \]

(4) \[ \frac{y}{72} = \frac{9}{9} \]

\[ y = 8 \]

\[ \frac{6}{9} = \frac{x}{9} \]

\[ \frac{36 = 8x}{8} = \frac{6 = x}{6} \]

(5) \[ \frac{10}{12} \]

\[ \frac{60}{9} = \frac{8x}{8} \]

\[ z = 7.5 \]

\[ \frac{z}{6} = \frac{36}{6} = \frac{6x}{6} \]

\[ x = 16 \]

\[ \frac{6}{6} = \frac{36}{18} \]

\[ 4.5 = y \]
\[ \frac{x}{10} = 10 \]

\[ x = 100 \]

\[ \frac{1000}{x} = 10 \]

\[ x = 100 \]

\[ \frac{z}{15} = \frac{75}{10} \]

\[ z = 7.5 \]
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What type and how much assistance, coaching, and prompting did the student receive on the attached piece?

H ow T o S e t u p P r o p o r t i o n s T o F i n d T h e M e a s u r e s

What was the student asked to do in order to complete the attached piece (i.e., what was the assignment)?

F i n d T h e C o r r e s p o n d i n g M e a s u r e m e n t o f S i m i l a r T r i a n g l e s

Self-evaluation (optional) - continue on back, if needed: ON EVIDENCE
1. Triangles $LMN$ and $RST$ are similar. Find the missing lengths of $ST$ and $RT$.

\[ \frac{LM}{RS} = \frac{MN}{ST} \]

2. Triangles $CDE$ and $HIJ$ are similar and the ratio of corresponding sides is $3:2$. Find the length of side $HI$ if $CD = 24$.

\[ \frac{CD}{HI} = \frac{3}{2} \]

3. Find the length of side $VZ$ if $WY = 6$, $VX = 15$, and $WX = 9$.

\[ \frac{VZ}{WY} = \frac{VX}{WX} \]
01 \frac{mL}{ST} \quad \frac{m}{ST}

02 \frac{6}{3} \quad \frac{30}{6} \quad ST = 5

03 \frac{3}{2} = \frac{24}{HI}
\frac{3}{3} = \frac{18}{HI}
HI = 6

04 \frac{6}{9} = \frac{MZ}{XZ}
9X = 90
X = 10
MZ = 10

05 \frac{mL}{RT} \quad \frac{3}{3} \times 3
\frac{3}{6} = \frac{21}{6}
RT = 3.5
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How much was done independently by the student? (Level of Independence = 80 %)

What type and how much assistance, coaching, and prompting did the student receive on the attached piece?

患重懸撲慈wrap the geometric fact that the sum of the angles of any triangle is 180°. Use of a calculator.

What was the student asked to do in order to complete the attached piece (i.e., what was the assignment)?

Find the measure of angles in given triangles.

Self-evaluation (optional) - continue on back, if needed: On evidence...
Angles and Triangles

Find the missing angle labeled \( x \): 10, 6, 5

1. \( \angle 56 \), \( \angle 60 \)
2. \( \angle 28^\circ \), \( \angle 75^\circ \)
3. \( \angle 45^\circ \)
4. \( \angle 28^\circ \), \( \angle ? \)
5. \( \angle 40^\circ \), \( \angle ? \)
6. \( \angle 68^\circ \), \( \angle 28^\circ \)
7. \( \angle 28^\circ \)
8. \( \angle \), \( \angle \)

Student Comment: EASY
1. \( \text{MLX} + 55° + 60° = 180 \)
   \( \text{MLX} + 115° = 180 \)
   \( -115 \)
   \( \text{MLX} = 65° \)

2. \( \text{MLY} + 38° + 75° = 180 \)
   \( \text{MLY} + 113° = 180 \)
   \( -113 \)
   \( \text{MLY} = 67° \)

3. \( \text{MLX} + 45° + 90° = 180 \)
   \( \text{MLX} + 135° = 180 \)
   \( -135 \)
   \( \text{MLX} = 45° \)

4. \( \text{MLX} + x + x = 180 \)
   \( 3 \text{MLX} = 180 \)
   \( \text{MLX} = 60° \)

5. \( \text{MLX} + 40° + 40° = 180 \)
   \( 2 \text{MLX} + 40° = 180 \)
   \( -40 \)
   \( x = 70° \)
   \( \text{MLX} = 70° \)

6. \( \text{MLY} + 68° + 28° = 180 \)
   \( \text{MLY} + 96° = 180 \)
   \( -96 \)
   \( \text{MLY} = 84° \)

7. \( \text{MLX} + 29° + 90° = 180 \)
   \( \text{MLX} + 119° = 180 \)
   \( -119 \)
   \( \text{MLX} = 61° \)

8. \( \text{MLX} + 70° + 70° = 180 \)
   \( \text{MLX} + 140° = 180 \)
   \( -140 \)
   \( \text{MLX} = 40° \)
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- Number Sense and Operations
- Patterns, Relations, and Algebra
- Geometry
- Measurement
- Data Analysis, Statistics, and Probability

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ON THE ATTACHED PIECE:

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How much was done independently by the student? (Level of Independence = 75 %)

What type and how much assistance, coaching, and prompting did the student receive on the attached piece?

How to simplify radicals with perfect square factors

What was the student asked to do in order to complete the attached piece (i.e., what was the assignment)?

Find the hypotenuse and legs of various right triangles using the Pythagorean Theorem

Self-evaluation (optional) - continue on back, if needed: [Evidence]

2011 MCAS PORTFOLIO APPEAL
Practice 5-3

Example Exercises

Example 1
Find the length of the hypotenuse. Use your calculator and round your answer to the nearest whole number.

1. 18 in.
2. 70 m
3. 100 m

Example 2
Find the value of the variable. Leave your answer in simplest radical form.

4. 6
5. 10
6. 9

7. 3
8. x
9. y

10. 10
11. 4
12. 16

Student comments: I have problem on two problem in radical form.
1) \( C^2 = a^2 + b^2 \)
   \[ C^2 = 38^2 + 24^2 \]
   \[ C = \sqrt{1452} \approx 38.1 \]
   
2) \( a^2 + b^2 \)
   \[ C^2 = 100^2 + 70^2 \]
   \[ C = \sqrt{10000 + 4900} \]
   \[ C = \sqrt{14900} \approx 122 \]
   
3) \( a^2 + b^2 \)
   \[ C^2 = 78^2 + 35^2 \]
   \[ C = \sqrt{78^2 + 35^2} \]
   \[ C = \sqrt{7809 + 1225} \]
   \[ C = \sqrt{9034} \approx 95 \]
   
4) \( a^2 + b^2 \)
   \[ b^2 = y^2 + x^2 \]
   \[ 16 = y^2 + 72 \]
   \[ \sqrt{y^2} = \sqrt{72} \]
   \[ y = \sqrt{72} \approx 8.48 \]

5) \( a^2 + b^2 \)
   \[ 14^2 = 10^2 + y^2 \]
   \[ 196 = 100 + y^2 \]
   \[ y^2 = 96 \]
   \[ y = \sqrt{96} \approx 9.8 \]

6) \( a^2 + b^2 \)
   \[ 10 = x^2 + r^2 \]
   \[ 100 = 81 + r^2 \]
   \[ r^2 = 19 \]
   \[ r = \sqrt{19} \]
   
7) \( a^2 + b^2 \)
   \[ 3^2 = 2^2 + q^2 \]
   \[ q = \sqrt{13} \]
   
8) \( a^2 + b^2 \)
   \[ x^2 = \frac{144}{2} \]
   \[ \sqrt{x^2} = \frac{12}{2} \]
   \[ x = 6 \]
   
9) \( a^2 + b^2 \)
   \[ y^2 = 25 + 81 \]
   \[ y = \sqrt{106} \approx 10.3 \]
10. \( c^2 = a^2 + b^2 \)
   \( 12^2 = 10^2 + 2^2 \)
   \( 144 = 100 + 4 \)
   \( -100 = -100 \)
   \( 44 = a^2 \)
   \( \sqrt{a^2} = a \)
   \( \sqrt{44} = a \)
   \( 2 \sqrt{11} = a \)

11. \( c^2 = a^2 + b^2 \)
   \( 5^2 = 4^2 + 3^2 \)
   \( 25 = 16 + 9 \)
   \( -16 = -16 \)
   \( 9 = b^2 \)
   \( \sqrt{9} = 3 \)
   \( 3 = b \)

12. \( c^2 = a^2 + b^2 \)
   \( 16^2 = x^2 + x^2 \)
   \( 256 = 2x^2 \)
   \( \frac{256}{2} = x^2 \)
   \( x^2 = 128 \)
   \( \sqrt{x^2} = \sqrt{128} \)
   \( \sqrt{128} = \sqrt{4 \cdot 4 \cdot 2} = 2 \cdot 2 \cdot \sqrt{2} = 8 \sqrt{2} = x \).
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REVIEW OF THE PYTHAGOREAN THEOREM

What was the student asked to do in order to complete the attached piece (i.e., what was the assignment)?

IDENTIFY THE HYPOTENUSE & LEGS OF GIVEN RIGHT TRIANGLES; DETERMINE IF GIVEN DIMENSIONS REPRESENT A RIGHT TRIANGLE

Self-evaluation (optional) - continue on back, if needed: ON EVIDENCE
Right Triangle and Pythagorean Theorem

10.6.5

Name the legs and hypotenuse of the right triangle.

1) The hypotenuse is \( m \).
2) The legs are \( z \) and \( u \).
3) The legs are \( R \) and \( T \).

Find the missing length.

4) \( x^2 = 3^2 + 4^2 \)
   \( x^2 = 5^2 \)
   \( x = \sqrt{25} = 5 \)

5) \( x^2 = 8^2 + 6^2 \)
   \( x^2 = 100 \)
   \( x = \sqrt{100} = 10 \)

6) \( x^2 = 6^2 + 8^2 \)
   \( x^2 = 100 \)
   \( x = \sqrt{100} = 10 \)

Determine if the given lengths are sides of a right triangle.

7) 2, 2, 4
   \( a^2 = 2^2 + 4^2 \)
   \( a^2 = 20 \)
   Not a right triangle

8) 9, 12, 15
   \( a^2 = 9^2 + 12^2 \)
   \( a^2 = 225 \)
   \( a = 15 \)
   Not a right triangle

9) 30, 40, 50
   \( a^2 = 30^2 + 40^2 \)
   \( a^2 = 2500 \)
   Yes, it is a right triangle

Student comments: Very easy.
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<tr>
<th>Number Sense and Operations</th>
<th>10.N.1</th>
<th>10.N.2</th>
</tr>
</thead>
</table>

ON THE ATTACHED PIECE:
What score did the student receive? (Level of Accuracy = ___%)

How much was done independently by the student? (Level of Independence = ___%)

What type and how much assistance, coaching, and prompting did the student receive on the attached piece?
**A BRIEF REVIEW THAT IN ANY TRIANGLE M\(L_1 + M L_2 + M L_3 = 180^\circ\)**
**A CALCULATOR**

What was the student asked to do in order to complete the attached piece (i.e., what was the assignment)?
**FIND THE MISSING ANGLE MEASURES IN VARIOUS TRIANGLES**

Self-evaluation (optional) - continue on back, if needed: **ON EVIDENCE**
Find the values of the missing angles.

1. \[
\begin{align*}
\angle A &= 15^\circ \\
\angle B &= 40^\circ \\
\angle C &= \ ?
\end{align*}
\]

2. \[
\begin{align*}
\angle A &= 37^\circ \\
\angle B &= 28^\circ \\
\angle C &= \ ?
\end{align*}
\]

3. \[
\begin{align*}
\angle A &= 6^\circ \\
\angle B &= \ ?
\end{align*}
\]

4. \[
\begin{align*}
\angle A &= 30^\circ \\
\angle B &= \ ?
\end{align*}
\]

5. \[
\begin{align*}
\angle A &= 20^\circ \\
\angle B &= \ ?
\end{align*}
\]

6. \[
\begin{align*}
\angle A &= 30^\circ \\
\angle B &= \ ?
\end{align*}
\]

---

**Student's Name:** Student Name

**Date:** 5/25/2011

**Learning Standard:** 10.G.5

---

1. \[
\begin{align*}
62 + 15 + x &= 180 \\
x &= 103
\end{align*}
\]

2. \[
\begin{align*}
77 + x &= 180 \\
x &= 103
\end{align*}
\]

3. \[
\begin{align*}
z + 60 + 27 &= 180 \\
z &= 43
\end{align*}
\]

---

**Student Comment:** It is easy. e = 60
5. \(80 + 20 + a = 180\)°
\[
\begin{align*}
720 + a &= 180 \\
-100 &= -100 \\
\hline
a &= 80
\end{align*}
\]

\(A + B = 180\)°
\[
\begin{align*}
80 + B &= 180 \\
-80 &= -80 \\
\hline
B &= 100
\end{align*}
\]

\(C + 100 + 35 = 180\)°
\[
\begin{align*}
C + 135 &= 180 \\
-35 &= -35 \\
\hline
C &= 45
\end{align*}
\]

6. \(25 + 30 + \theta = 180\)°
\[
\begin{align*}
55 + \theta &= 180 \\
-55 &= -55 \\
\hline
\theta &= 125
\end{align*}
\]

\(g + y = 180\)°
\[
\begin{align*}
85 + y &= 180 \\
-85 &= -85 \\
\hline
y &= 95
\end{align*}
\]

\(e + 55 + 48 = 180\)°
\[
\begin{align*}
e + 103 &= 180 \\
-103 &= -103 \\
\hline
e &= 77
\end{align*}
\]
**2011 MCAS Portfolio Appeal**

**WORK DESCRIPTION for High School Competency Portfolio in**

**MATHEMATICS**

(Attach one WORK DESCRIPTION to each piece in the portfolio.)

<table>
<thead>
<tr>
<th>Student's Name:</th>
<th>Date work was produced:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Name</td>
<td>5-25-11</td>
</tr>
</tbody>
</table>

The Mathematics competency portfolio must include:
- Work samples with a minimum of four examples or problems solved by the student for each learning standard listed below.
- Evidence of the student's own thinking and problem solving. Show all work.
- A score (% accurate) for each piece of student work.
- Work produced as independently as possible by the student, with all corrections clearly marked, and a description of the assistance given to the student. The Level of Independence must be indicated below.
- Work may not be corrected by the teacher and submitted as the student's own work.

Please indicate the strand and learning standard documented in the attached work sample:

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<td>Patterns, Relations, and Algebra</td>
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<td>Geometry (Choose any three)</td>
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<td>Data Analysis, Statistics, and Probability</td>
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</table>

**ON THE ATTACHED PIECE:**

What **score** did the student receive?  
(Level of Accuracy = **100 %**)

How much was done **independently** by the student?  
(Level of Independence = **95 %**)

What type and how much **assistance, coaching, and prompting** did the student receive on the attached piece?  
**CALCULATOR AND MCAS REFERENCE SHEET**

What was the student asked to do in order to complete the attached piece (i.e., what **was the assignment**)?  
**CALCULATE THE MISSING DIMENSIONS FOR 45°-45°-90° AND 30°-60°-90° TRIANGLES**

Self-evaluation (optional) - continue on back, if needed:
Special Triangles

Find The Missing Sides

1. \( \frac{BA}{CA} = \frac{2y}{y\sqrt{3}} = \frac{8}{4\sqrt{3}} \)
   \( CA = \frac{y\sqrt{3}}{4} \)

2. \( \frac{CB}{CA} = \frac{y}{2.5\sqrt{3}} \)
   \( CA = \frac{y\sqrt{3}}{2.5} \)

3. \( \frac{BC}{AC} = \frac{8\sqrt{3}}{8} = \frac{\sqrt{3}}{3} \)
   \( \frac{AB}{2y} = \frac{2(3\sqrt{3})}{6} \)

4. \( \frac{AC}{AB} = \frac{x}{x\sqrt{3}} = \frac{4}{4\sqrt{3}} \)

5. \( \frac{CB}{AB} = \frac{x}{x\sqrt{3}} = \frac{8}{8\sqrt{3}} \)

6. \( \frac{AC}{BC} = \frac{5\sqrt{2}}{15\sqrt{2}} \)

Student Comment: The problem is difficult.
WORK DESCRIPTION for High School Competency Portfolio in
MATHEMATICS

(Attach one WORK DESCRIPTION to each piece in the portfolio.)

Student’s Name: [Student Name] Date work was produced: 5-25-11

The Mathematics competency portfolio must include:
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- [ ] Number Sense and Operations
  - [ ] 10.N.1
  - [ ] 10.N.2
- [ ] Patterns, Relations, and Algebra
  - [ ] 10.P.2
  - [ ] 10.P.4
  - [ ] 10.P.5
  - [ ] 10.P.7
- [X] Geometry
  - [ ] 10.G.1
  - [ ] 10.G.2
  - [ ] 10.G.3
  - [ ] 10.G.4
  - [ ] 10.G.5
  - [X] 10.G.6
  (Choose any three)
  - [ ] 10.G.7
  - [ ] 10.G.8
  - [ ] 10.G.9
  - [ ] 10.G.10
  - [ ] 10.G.11
- [ ] Measurement
  - [ ] 10.M.1
  - [ ] 10.M.2
  - [ ] 10.M.3
- [ ] Data Analysis, Statistics, and Probability
  - [ ] 10.D.1
  - [ ] 10.D.2

ON THE ATTACHED PIECE:

What score did the student receive? (Level of Accuracy = [100 %])

How much was done independently by the student? (Level of Independence = [100 %])

What type and how much assistance, coaching, and prompting did the student receive on the attached piece? CALCULATOR & MCAS REFERENCE SHEET

What was the student asked to do in order to complete the attached piece (i.e., what was the assignment)? FINDING THE MISSING SIDE OF 45°-45°-90° AND 30°-60°-90° TRIANGLES USING RELATIONSHIPS SHOWN ON MCAS REFERENCE SHEET

Self-evaluation (optional) - continue on back, if needed: ON EVIDENCE

2011 MCAS PORTFOLIO APPEAL
Example 1

ABCD is a square. Find $d$ to the nearest:
1. whole number
2. tenth
3. hundredth

Find the value of $x$ to the nearest tenth.

4. $\begin{array}{c}
16 \\
16 \\
16
\end{array}$

5. $\begin{array}{c}
50 \\
50 \\
50 \\
50
\end{array}$

Example 2

Find the value of each variable. Leave your answer in simplest radical form.

7. $\begin{array}{c}
a \\
b \\
30°
\end{array}$

8. $\begin{array}{c}
x \\
y \\
30°
\end{array}$

9. $\begin{array}{c}
a \\
b \\
30°
\end{array}$

10. $\begin{array}{c}
a \\
b \\
60°
\end{array}$

STUDENT COMMENT: It is easy to do with Reference Sheet.
4. \( y = x \sqrt{2} = 16 \sqrt{2} \\
   y = 22.62 \)

5. \( y = x \sqrt{2} = 50 \sqrt{2} \\
   y = 70.71 \)

6. \( x = x \sqrt{2} = 13 \sqrt{2} \\
   x = 18.47 \)

7. \( x = \frac{y}{\sqrt{2}} = 2 \)

8. \( x = 2 \)

9. \( \frac{x}{y} = \frac{5}{5} \)

   \( y = 2.5 \)

   \( p = y = 2.5 \)

   \( q = x \sqrt{2} = 7.5 \sqrt{2} \)

10. \( y = 3 \)

   \( q = 2y = 2(3) = 6 \)

   \( f = y \sqrt{3} = 3 \sqrt{3} \)