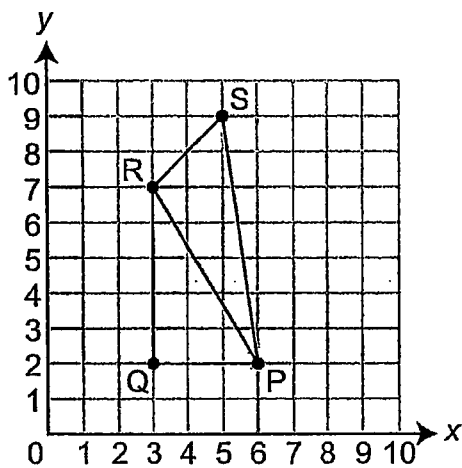# PSSA, Grade 8 Math

Triangles PQR and PRS

Handscoring
Anchor Set

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.

Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

74. *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.

Grade 8 Math
Triangles PQR and PRS

Assessment Anchor this item will be reported under:
    M08.C-G.2 Understand and apply the Pythagorean theorem.
Specific Anchor Descriptor addressed by this item:
    M08.C-G.2.1 Solve problems involving right triangles by applying the Pythagorean theorem.

Scoring Guide:

Score	In this item, the student –
4	Demonstrates a thorough understanding of the Pythagorean theorem and how to apply the Pythagorean theorem by correctly solving problems and clearly explaining procedures.
3	Demonstrates a general understanding of the Pythagorean theorem and how to apply the Pythagorean theorem by correctly solving problems and clearly explaining procedures with only minor errors or omissions.
2	Demonstrates a partial understanding of the Pythagorean theorem and how to apply the Pythagorean theorem by correctly performing a significant portion of the required task.
1	Demonstrates minimal understanding of the Pythagorean theorem and how to apply the Pythagorean theorem.
0	The response has no correct answer and insufficient evidence to demonstrate any understanding of the mathematical concepts and procedures as required by the task. Response may show only information copied from the question.
Non-scorables	B – Blank, entirely erased or written refusal to respond F – Foreign Language K – Off-task U – Unreadable

Top Scoring Student Response And Training Notes:

Score	Description
4	Student earns 4 points.
3	Student earns 3.0 – 3.5 points.
2	Student earns 2.0 – 2.5 points.
1	Student earns 0.5 - 1.5 points. OR Student demonstrates minimal understanding of the Pythagorean theorem and how to apply the Pythagorean theorem.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.

A.

What?	Why?
$\sqrt{34}$ units (5.83) **OR equivalent**	**Sample Explanation:** I know PQ is 3 units and QR is 5 units by counting on the graph. Using the Pythagorean theorem, $3^2 + 5^2 = PR^2$, which is $9 + 25 = PR^2$. So, $PR^2 = 34$ and $PR = \sqrt{34}$ units.

(2 score points)
>   1 point for correct answer
>   1 point for complete support
>>   OR ½ point for correct but incomplete support

B.

| What?	Why?
$\sqrt{50}$ units (7.07 – 7.1) **OR equivalent** [Note: Carry over any error from Part A]	**Sample Explanations:** The length of PS can be found using the Pythagorean theorem: $\qquad 1^2 + 7^2 = PS^2$ $\qquad 1 + 49 = PS^2$ $\qquad 50 = PS^2$ $\qquad \sqrt{50} = PS$ If triangle PRS were a right triangle, then $PR^2 + RS^2 = PS^2$. However, $(\sqrt{8})^2 + (\sqrt{34})^2 = 8 + 34 = 42$, and that is not equal to $(\sqrt{50})^2$. Therefore, the triangle is not a right triangle.

(2 score points)
>   1 point for correct answer
>   1 point for complete support
>>   OR ½ point for correct but incomplete support

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.
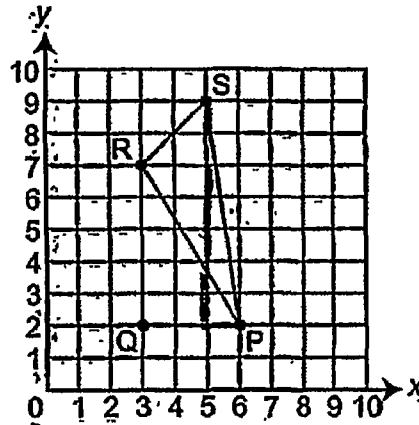
Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

$$a^2 + b^2 = c^2 \rightarrow 5^2 + 3^2 = c^2 \rightarrow 25 + 9 = c^2 \rightarrow$$
$$34 = c^2 \rightarrow \sqrt{34} = \sqrt{c^2} \rightarrow \boxed{c \approx 5.83}$$

Side PR is about 5.8 units long.

I knew the values to use in the pythagorean theorem because you need to figure out the hypotenuse, which would be c. The other two values, a and b are the legs. I already knew that the sides QR and QP were the legs because they weren't directly across from the right angle RQP. The line RP, which is the hypotenuse, is directly across.

4   A. 2 points – correct answer and complete support (use of Pythagorean theorem with correct values and explanation for which values to use).

B. 2 points – correct answer ($\sqrt{50}$) and complete support [shows work to find true length of PS and length if it were a right triangle ($\sqrt{42}$), and compares].

74. **Continued.** Please refer to the previous page for task explanation...

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.

In order to find the true length of PS, I had to create a right triangle because SP isn't part of a right triangle. The new triangle's legs are 7 units for one leg and 1 unit for another.
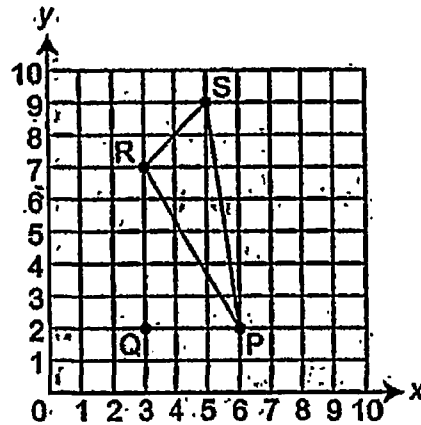
$$7^2 + 1^2 = c^2 \rightarrow 50 = c^2 \rightarrow \boxed{c = \sqrt{50}}$$

The true length of PS is about 7.07 units. There is evidence here to say that PRS isn't a right triangle. By plugging in the values I already know (RS = $\sqrt{8}$, PR = $\sqrt{34}$), the equation comes out to be

$$\sqrt{8}^2 + \sqrt{34}^2 = \sqrt{50}^2 \rightarrow 8 + 34 = 50 \rightarrow \boxed{42 \neq 50}$$

Because the theorem doesen't work, this triangle is not a right triangle.

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.

Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

$a^2 + b^2 = c^2$
$3^2 + 5^2 = c^2$
$9 + 25 = c^2$
$c^2 = 34$ $c \approx 5.8$
$c = \sqrt{34}$

I know which values to use in the pythagorean theorem because of the information given, and my knowledge of the Pythagorean Theorem. Because I know that △ PQR is a right triangle and the pythagorean Theorem applies only to right triangles, I know that I must use △ PQR. The distances of QP and QR are provided because of the graph on which △ PQR is located. Then, I know that ∠Q must be the right angle and QR and QP are the legs of △PQR because QP and RQ are parallel to the x axis and the y axis. Then, I plug their lengths into the pythagorean theorem as the leg lengths, or a and b, because the right angle is opp. QR. This is how I know which values to use.

4   A. 2 points – correct answer and complete support.
    B. 2 points – correct answer and complete support.

74. *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.

$$a^2 + b^2 = c^2$$
$$3^2 + 5^2 = c^2$$
$$9 + 25 = c^2$$
$$34 = c^2$$
$$c = \sqrt{34}$$
$$c = 5.83$$
$$\overline{RP} = 5.83$$

$$a^2 + b^2 = c^2$$
$$7^2 + 1^2 = c^2$$
$$49 + 1 = c^2$$
$$c^2 = 50$$
$$c = \sqrt{50}$$
$$\overline{SP} = \sqrt{50}$$
$$\overline{PS} = \sqrt{50}$$

$$a^2 + b^2 = c^2$$
$$\overline{RP}^2 + \overline{RS}^2 \stackrel{?}{=} \overline{SP}^2$$
$$(\sqrt{34})^2 + (\sqrt{8})^2 \stackrel{?}{=} (\sqrt{50})^2$$
$$34 + 8 \stackrel{?}{=} 50$$
$$42 \neq 50$$

Triangle PRS is not a right triangle. $\overline{PS} = \sqrt{50}$, or ≈ 7.1 units long.

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.
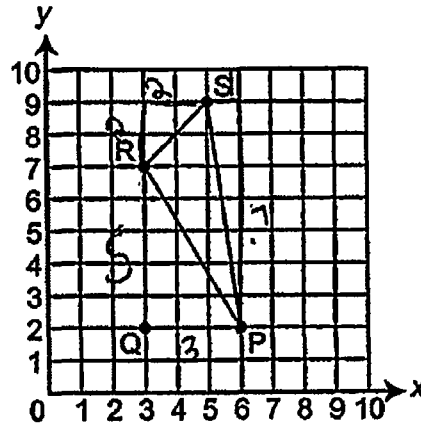
Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

Side length PR is = to 5.831. I know this is right because Pythagorean theorem is equal to $a^2+b^2=c^2$ in a triangle.

I did 7-2 to get the one length 5 then 6-3 to get the other 3. Then I did 5·5=25 and 3·3=9 25+9=34 then $\sqrt{34}$= 5.831. That's how I got my answer

$25+9=c^2$
$34=c^2$

5.831
$5\cdot5=25+9$ $\sqrt{34}=\sqrt{c^2}$ $3\cdot3=9$

3   A. 2 points – correct answer and complete support.

B. 1.5 points – correct answer, correct but incomplete support (shows work to find $\sqrt{50}$ at the top of the first page).

74. *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.

Length of PS is $\sqrt{50}$. PRS is not a right triangle because they can not be broken down into a straight answer not a decimal. $\sqrt{8}$ = 2.83 $\sqrt{50}$ = 7.1 and those 2 do not make a exact answer or straight answer the the triangle PRS is not a right triangle. Doesn't have a 90° angle anyways.

$\sqrt{8}$ + $\sqrt{50}$ = c2
$\sqrt{58}$

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.
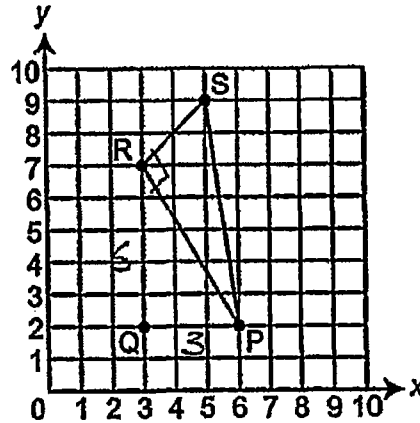
Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how
    you know which values to use in the Pythagorean theorem.

$$5^2 + 3^2 = x^2 \qquad x = 5.83$$
$$34 = x^2$$

I know what values to use because I
counted the hight on the graph. I knew
line RQ was 5 units and line QP was 3
units long. I then used my Pythagorean
theorem equation, $a^2 + b^2 = c^2$, to find the
length of line RP.

---

2   A. 2 points – correct answer and complete support.

     B. 0.5 point – incorrect answer for the length of PS, correct but incomplete support
(found $\sqrt{42}$).

74. *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.

$$PR = 5.830951895 \ (\sqrt{34})$$

$$RS = \sqrt{8}$$

$$PS = x$$

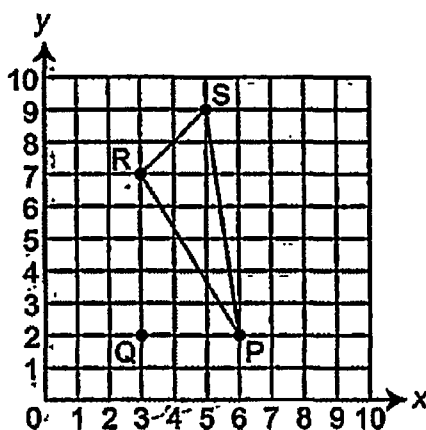$$5.830951895^2 + \sqrt{8}^2 = x^2$$

$$34 + 8 = x^2$$

$$42 = x^2$$

$$\sqrt{42} = \sqrt{x^2}$$

$$6.480740698 = x$$

$$PS = \sqrt{42}$$

Triangle PRS is not a right triangle.

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.

Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

$a = height$ $b = length$ $c = hypotenuse$

$3^2 + 5^2 = c^2$

$9 + 25 = c^2$

$\sqrt{34} = c = 5.83$

5.83 in

2   A. 1.5 points – correct answer and correct but incomplete support ("height" and "length" are insufficient to explain which values to use). [Consider "in." or similar on the answer to be a blemish only – does not affect score.]
    B. 0.5 point – incorrect answer for the length of PS; correct but incomplete support (found $\sqrt{41.98}$).

74.   *Continued.* Please refer to the previous page for task explanation.
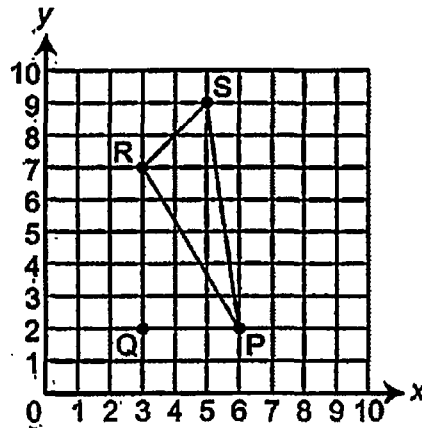
Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.

$$\sqrt{8}^2 + 5.83^2 = c^2$$

$$8 + 33.98 = c^2$$

$$\sqrt{41.98} = \sqrt{c^2}$$

$$\boxed{6.48}$$

no, it is not a right triangle

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.

Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

$a^2 + b^2 = c^2$

$3^2 + 5^2 = c^2$ $\sqrt{34}$

$9 + 25 = 34$

The legs of the triangle are the base and height, so you must use them.

1   A. 1.5 points – correct answer and correct but incomplete support (explanation for which values to use is insufficient).
     B. 0 points – incorrect answer and support.

74. *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.

$$\sqrt{8} + \sqrt{34} \neq \sqrt{74}$$

Triangle PRS is not a right triangle

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.
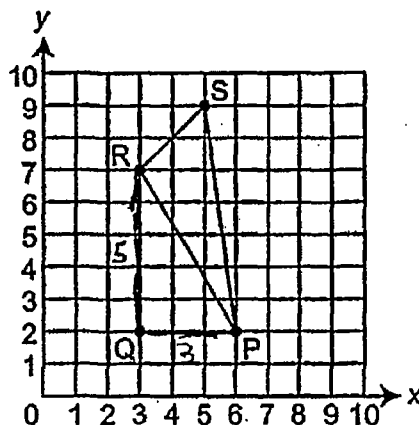
Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

$$a^2 + b^2 = c^2$$
$$3^2 + 5^2 = c^2$$
$$9 + 25 = c^2$$
$$\sqrt{34} = \sqrt{c^2}$$
$$5.5 = c$$

a and b in the equation are called the legs and they are the distances of the sides that form the right triangle.

---

1 A. 1 point – incorrect answer ("5.5" is considered the answer, even though √34 is also seen), complete support. Note that a somewhat unclear explanation for which values to use may be considered complete if 5 and 3 are correctly shown on the figure, as seen here.

   B. 0 points – incorrect answer for the length of PS, and insufficient support for any credit.

74.   *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.

$PS = 7$ $RS = \sqrt{8}$
$RS = 3.5$

The triangle PRS is not
a right triangle

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.
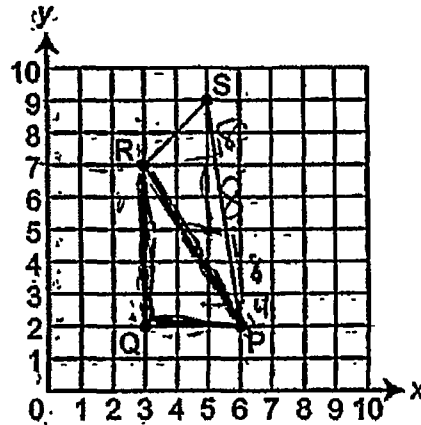
Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

$$6^2 + 3^2 = c^2$$

$$36 + 9 = c^2$$

$$\sqrt{45} = \sqrt{c}$$

The length of side PR is 6.70

I know to use these values because from the bottom to the top that is the height so I squared both then added to get my answer

1   A. 0.5 point – incorrect answer due to a counting error (6 units for RQ instead of 5), correct but incomplete support (attempt to solve for PR using the Pythagorean theorem, but the explanation of which values to use is insufficient).
     B. 0 points – incorrect answer and support.

74. *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.

The length of PS $\sqrt{30}$. It forms a right angle because a right angle is 90° & 30 can be divided into 90° evenly on each side. There fore PRS is proven to be a right triangle.

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.
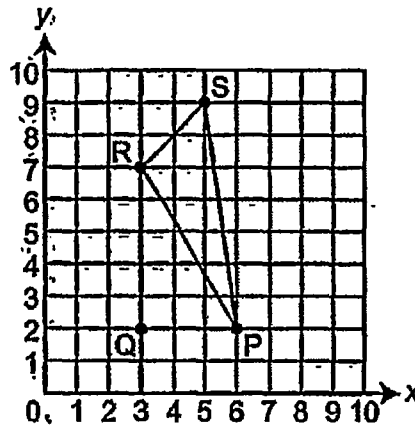
Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

$$a^2 + b^2 = c^2$$
$$7^2 + 2^2 = c^2$$
$$49 + 4 = c^2$$
$$\sqrt{53} = \sqrt{c^2}$$
$$7 = c$$

When I was finding the sides for each letter I just counted over how many blocks to each point. Then I put them in the pathagorem theorem then add them and got the square root of 53 witch was 7.

---

1 A. 0.5 point – incorrect answer (both values used are incorrect), correct but incomplete support (attempt to solve for PR using the Pythagorean theorem, but the explanation of which values to use is insufficient).

    B. 0 points – incorrect answer and support.

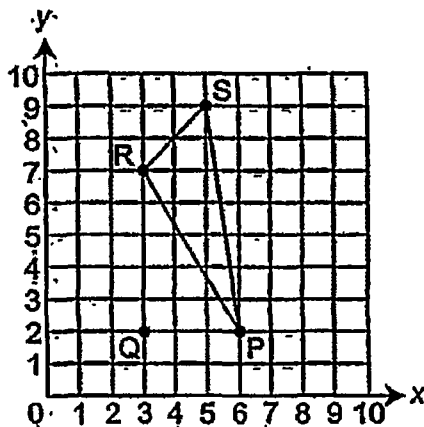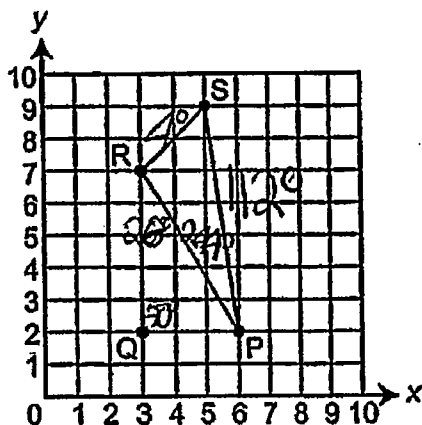**74.** *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = √8 units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.

$$a^2 + b^2 = c^2$$
$$2^2 + 7^2 = c^2$$
$$4 + 49 = c^2$$
$$\sqrt{53} = c^2$$
$$7.3 = c$$

The triangle PRS is not a right triangle because the answer dosent come out to a whole numer after you solve the problem.

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.

Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

The pythagorean theorem is when you have to find the value of one side. $a^2 + b^2 = c^2$ You fill in the numbers by knowing what side the missing number is on.

0   Nothing is correct for credit in either part. There is no credit for providing the Pythagorean theorem only (it is provided for the student on a formula sheet).

74. *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

**B.** Find the length of PS and prove whether triangle PRS is a right triangle.

PRS is not a right angle. I know this because PS is not a straight line, it is slanted so it doesn't make a right angle.

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.

Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

$$(6,2) \cdot P \qquad (3,7) \cdot R$$

$$12^2 + 10^2 = 244$$

---

0 Nothing is correct for credit in either part.

74. *Continued.* Please refer to the previous page for task explanation

Beth thinks triangle PRS looks like a right triangle. She knows that RS = √8 units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.
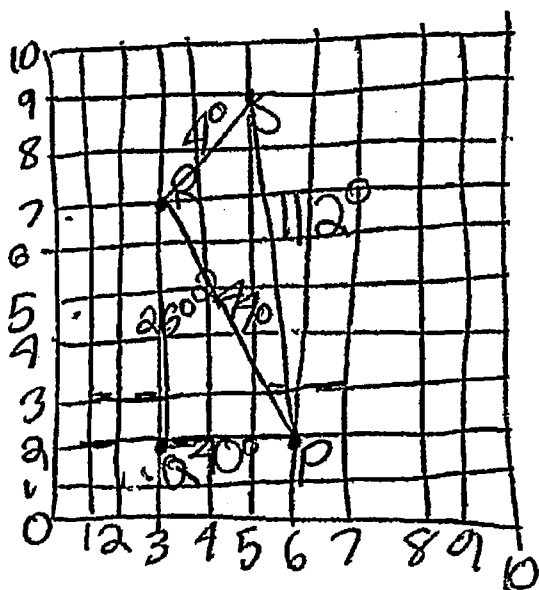
Thus the triangle is not a
right triangle because it
has 2 obtuse angles and one
acute angle

PSSA, Grade 8 Math

Triangles PQR and PRS

Handscoring
Training Set 1

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.
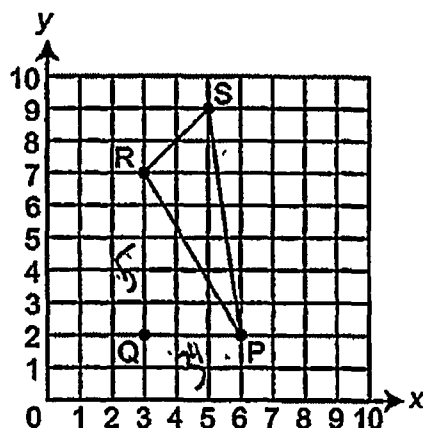
Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

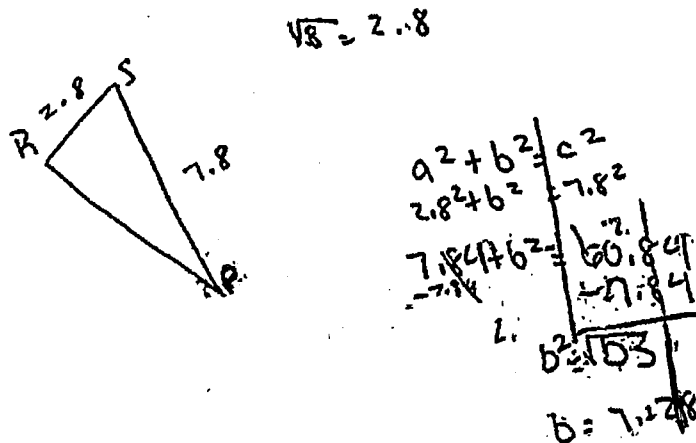$$a^2 + b^2 = c^2$$

$$5^2 + 3^2 = c^2$$

$$34$$

$$\sqrt{34}$$

length of side PR is 5.8 because on leg is 5 and the other is 3 so I did Pythagorem theorem and got 5.8.

74.   *Continued.* Please refer to the previous page for task explanation.
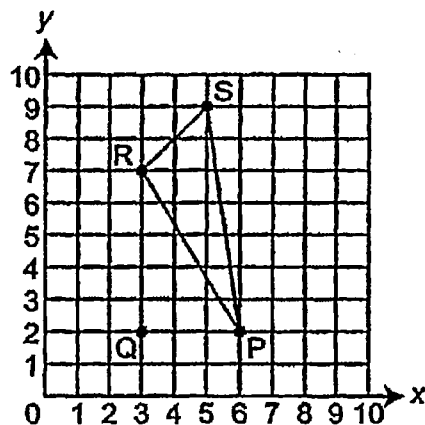
Beth thinks triangle PRS looks like a right triangle. She knows that RS = √8 units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.

$$\sqrt{8} = 2 . . 8$$

$$a^2 + b^2 = c^2$$
$$2.8^2 + b^2 = 7.8^2$$

$$7.84 + b^2 = 60.84$$
$$-7.84 \qquad -7.84$$

$$b^2 = \sqrt{53}$$

$$b = 7.2$$

The triangle is a right triangle
because I found that PS is 7.8 and RS
is 2.8. So now we have one leg and the
hypothenus. I did the equation for pythagorean
theorem and found the missing leg which
is 7.28 I pluged it in. and the two
legs equalled 7.8 which is the hypothenus
which means that it is a right triangle.

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.

Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

Pythagorean theorem is $A^2 + B^2 = C^2$. C is always the side not making up the right angle

$$3^2 + 5^2 = x^2$$

$$9 + 25 = x$$

$$\sqrt{34} = x$$

$$PR = 5.8$$

74. *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.
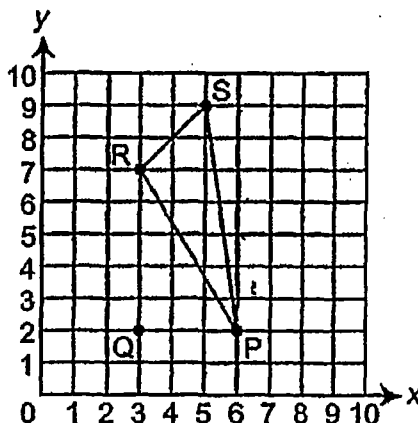
$$2^2 + 7^2 = x$$

$$4 + 49 = \overline{53}$$

no it's not

$$7.3 =$$

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.

Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

$$a^2 + b^2 = c^2$$
$$3^2 + 5^2 = c^2$$
$$9 + 25 = c^2$$
$$\sqrt{34} = c^2$$

$a = PQ$
$b = QR$
$c = PR$

The length of side PR is approximately 5.83 units.

$$\sqrt{34} = 5.830951\ldots$$

I used the two legs (PQ & QR) in Pythagorean theorem to find the length of the hypotenuse (PR). I knew to use PQ & QR because they both intersect at a right angle.

74.   *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

B.   Find the length of PS and prove whether triangle PRS is a right triangle.
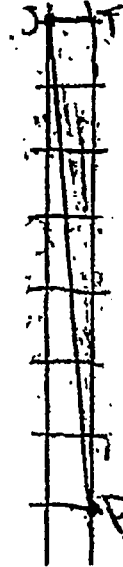
I can use the shaded region which is definetly a right triangle with leg lengths that are exact to find the length of PS.

$a = PT$
$b = ST$
$c = PS$

$a^2 + b^2 = c^2$
$7^2 + 1^2 = c^2$
$49 + 1 = c^2$
$50 = c^2$
$\sqrt{50} = 7.0710678...$

The length of PS is approximately 7.1.

legs
$RS = \sqrt{8} \approx 2.83$ (a)
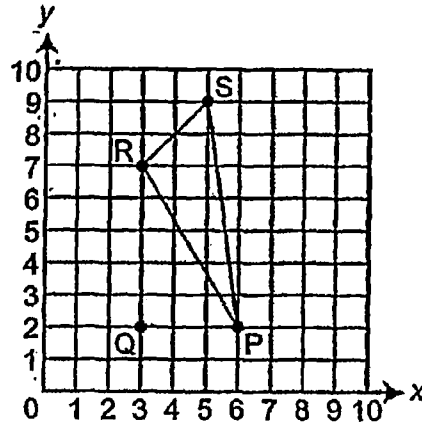$PR = 5.83$ (b)
hypotenuse
$PS = 7.1$ (c)

$a^2 + b^2 = c^2$
$2.83^2 + 5.83^2 = 7.1^2$
$8 + 33.99 = 50.41$
$41.99 \neq 50.41$

Triangle PRS <u>cannot</u> be a right triangle because after finding the approximate values of each side, the rule is not equal when solved.

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.

Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

$$a^2 + b^2 = c^2 \qquad a^2 + 25 = 34$$

$$a^2 + 5^2 = 6^2 \qquad 3^2 + 25 = 34$$

$$\sqrt{34} = a^2 \qquad \sqrt{34} = 14 = a$$

I know which values to use in the Pythagorean Theorem because you take your finger and line it up with the numbers and then times them by 2.

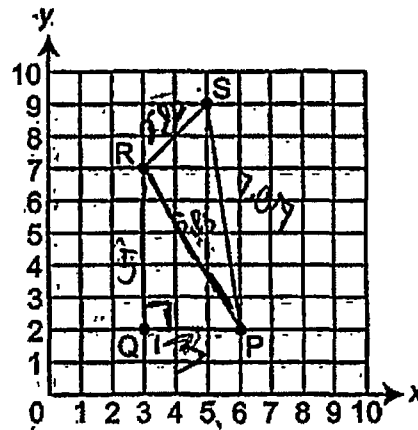**74.   *Continued.* Please refer to the previous page for task explanation.**

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

B.   Find the length of PS and prove whether triangle PRS is a right triangle.

$RS = \sqrt{8}$ $PRS = \sqrt{9}$ $\dfrac{9}{\sqrt{8}}$

Triangle PRS is not a right triangle because for it to be a right triangle it has to equal a 90° angle. This triangle only has a 42° angle and it would also need to have a square in the corner to show that it is a right triangle also.

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.

Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

I am going to use Pythagorean theorem to find the length of side PR.

$a^2 + b^2 = c^2$

$3^2 + 5^2 = x^2$

$9 + 25 = x^2$

$\sqrt{34} = \sqrt{x^2}$

The length of side PR is approximately 5.83.

$5.83 = x$

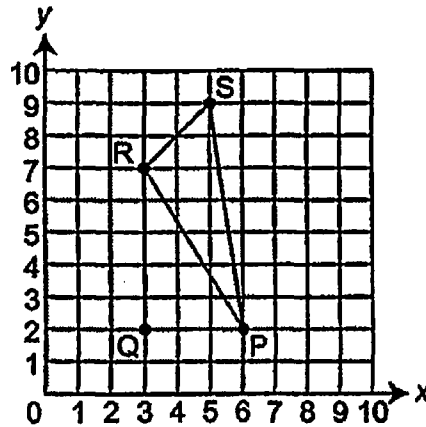**74.**   *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.

I am going to find the length of PS and prove wheter triangle PRS is a right triangle. To find the length of PS, I used the distance formula ($d=\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}$). and the points of line PS (6,2) (5,9). When I used that formula, I found the length of PS to be approximately 7.07. I also found that triangle PRS is not a right triangle. When I put the three triangle

(6,2)(5,9)

$d=\sqrt{(6-5)^2+(2-9)^2}$

$d=\sqrt{(1)^2+(-7)^2}$

$d=\sqrt{1+49}$

$d=\sqrt{50}$

$d\approx7.07$

RS≈2.82

RP≈5.83

PS≈7.07

$a^2+b^2=c^2$

$2.82^2+5.83^2=7.07^2$

$8+34=50$

$42\neq50$

lengths into pythagorean theorem, the numbers did not work. Therefore, the length of PS≈7.07 and triangle PRS is not a right triangle.

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.

Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

$$P^2 + Q^2 = R^2$$

$$\frac{6}{2} + \frac{3}{2} = \frac{3}{7}$$

$$3^2 + 3\frac{2}{2} = 3\frac{2}{7}$$

$$9 + 2\frac{1}{4} = .18$$

$$R = .18$$

$$Q = 2\frac{1}{4}$$

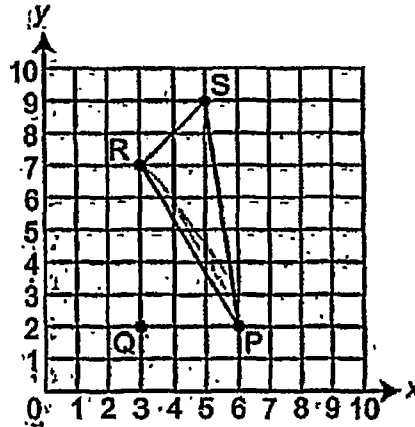I know the value of Pythagorean theorem because I used the formula.

74. *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

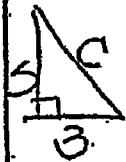B. Find the length of PS and prove whether triangle PRS is a right triangle.

PS is 6 units, It is
not a right triangle
because it does not
have a 90° angle which
all right triangles have.

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.

Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

$5^2 + 3^2 = C^2$

$25 + 9 = C^2$

$34 = C^2$

$\sqrt{34} = C$

34 units

$C \approx 5.83$

I know C = hypothnes and the hypothnes in not connected to the right angle. And either leg ean be b^2 or A^2. And to find this length, you count each unit block. Those blocks represent 1 unit.

74. *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

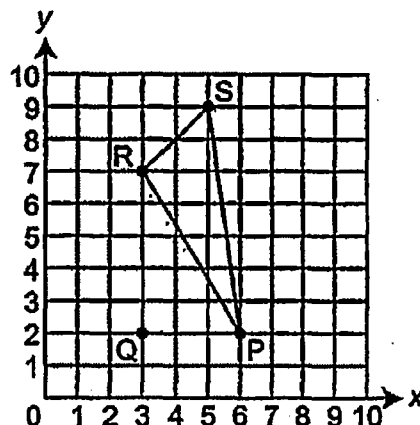B. Find the length of PS and prove whether triangle PRS is a right triangle.
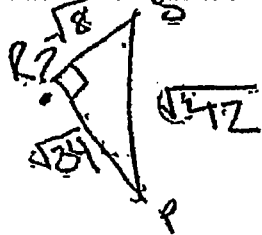
$8 + 34 = c^2$

$c = \sqrt{42}$

No, it is not a right angle because length RP has to coorespond on triangle PRS and PQR. Because they share the same side. And it does not coorespond.

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.

Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

$$a^2 + b^2 = c^2$$
$$9^2 + 9^2 = c^2$$
$$81 + 81 = c^2$$
$$\sqrt{162} = \sqrt{c^2}$$
$$c = 12.73$$

I know what values to use because a is the straight side and you add 2 +7 to get 9. b is the base so you add 6+3. C is the hypotenuse which is the missing number. $a^2 + b^2 = c^2$.

74.   *Continued.* Please refer to the previous page for task explanation.
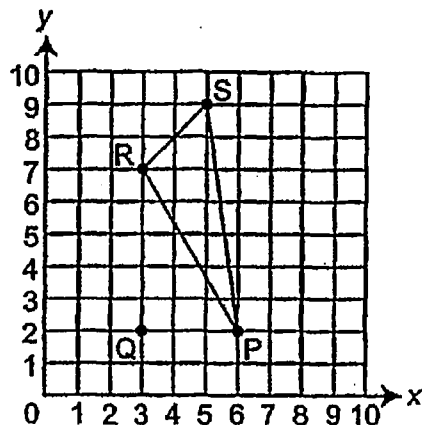
Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.

$$a^2 + b^2 = c^2$$
$$2^2 + 13^2 = c^2$$
$$4 + 169 = c^2$$
$$\sqrt{173} = \boxed{13.2}$$

Triangle PRS is not a right triangle.

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.

Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

I know which values to use in the Pythagorean theorem because of the units on the graph. Side QP is 3 units so that was a. Side RQ is 5 units as b. I added them together after squaring them and got 34. The square root of 34 is 5.83 so that's what side PR is.
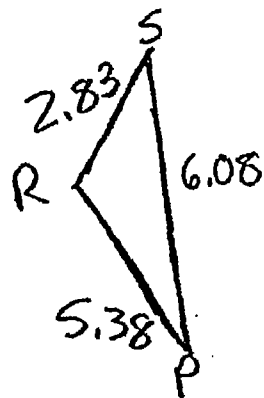
74. *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = √8 units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.
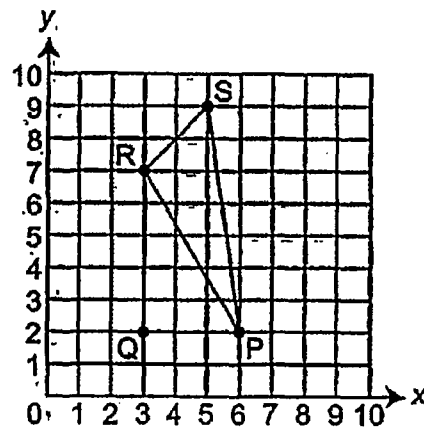
$PR = 5.38$ $PS = 6.08$

$RS = \sqrt{8} = 2.83$

$2.83^2 + 5.38^2 = c^2$

$8.01 + 28.94 = 36.95$

$\sqrt{36.95} = 6.08$

PRS is not a right triangle because no side together forms a 90° angle.

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.

Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

From Q to P is 3 units and from R to Q is 5 units. Since those are the legs then $3^2 + 5^2 = \overline{RP}^2$ 9+25=34 and the square root is $\sqrt{34}$ or about 5.83.

74. *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.

$RS = \sqrt{8}$

$RP = \sqrt{34}$

~~but~~ $\sqrt{8}^2 + \sqrt{34}^2$ should equal the length of PS² then finding PS must be first. Creating a point (6,9) and naming it T will create right triangle STP. S to T is 1 and T to P is 7. 1² + 7² = PS². 1 + 49 = 50. PS is length $\sqrt{50}$. Back to $\sqrt{8}^2 + \sqrt{34}^2 = \sqrt{50}^2$. Squaring radicals means basically the "radical" part of radical 8 is removed. 8 + 34 = 50. 42 = 50, since this is not true, Triangle PRS is not a right triangle.

Subject: Math   Item: Triangles PQR and PRS   Grade: 8
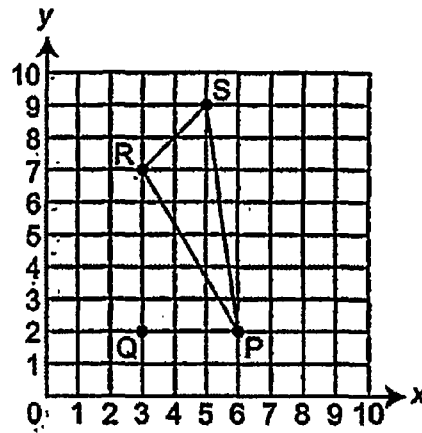
Name   _____

Number	Score	Notes
T1-1		
T1-2		
T1-3		
T1-4		
T1-5		
T1-6		
T1-7		
T1-8		
T1-9		
T1-10		

PSSA, Grade 8 Math

Triangles PQR and PRS

Handscoring
Training Set 2

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.

Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

$$3^2 + 5^2$$
$$25 + 9 = \sqrt{36^2} \quad c = 6$$

I ~~know~~ know which values to use
by counting the number of squares
along the edge because that is the
number of units I have to
use.

74. *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.
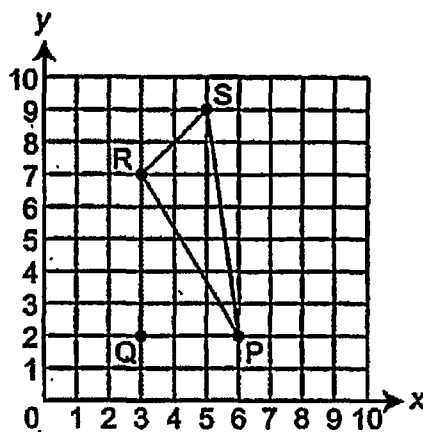
$$6^2 + \sqrt{8}^2 = c^2$$

$$36 + 8 = c^2$$

$$44$$

$$6.6$$

Triangle PRS is not a right triangle be cause if you use the Pythagorean theorem $\sqrt{8}^2 = 8$ and the side claims it is longer than the 6 unit side although not true.

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.

Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.
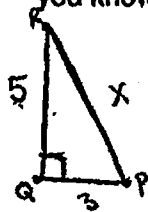
$$5^2 + 3^2 = x^2$$
$$a^2 + b^2 = c^2$$
$$25 + 9 = x^2$$
$$34 = x^2$$
$$5.83 \approx x$$

$$\boxed{5.83 \, un}$$

I know that the right angle is angle Q so I counted Q to P and Q to R to get the sides lengths of 3 and 5. Then I used the equation $a^2 + b^2 = c^2$ to get the length of the hypotenous $\overline{RP}$ - 5.83 un.

74.   *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.

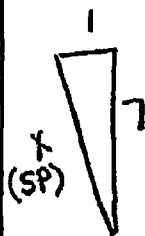If PRS was a right triangle, then...
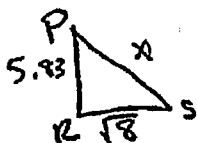
$$5.83^2 + \sqrt{8}^2 = x^2$$

$$33.99 + \sqrt{64} = x^2$$

$$33.99 + 8 = x^2$$

$$41.99 = x^2$$

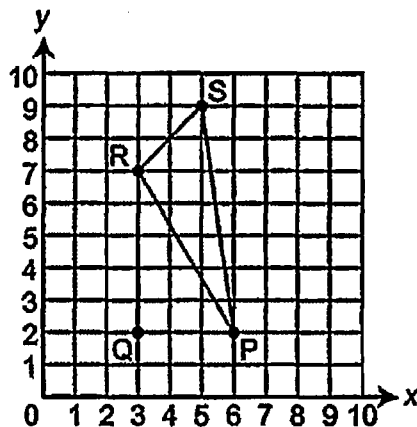$$6.48 = x$$

$$1^2 + 7^2 = x^2$$

$$1 + 49 = x^2$$

$$50 = x^2$$

$$7.07 = x$$

PS is not a right triangle because if you set up a right triangle using PS as the hypotenous, then PS would be 7.07. But △PRS made PS 6.48 so △PRS is not a right triangle.

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.

Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.
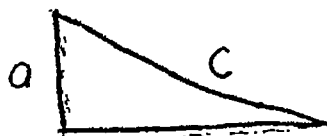
$$a^2 + b^2 + c^2$$

I know what valves to use because I looked at the Formula sheet. When I was looking at the formula sheet I remembered how to do this kind of problem.

74.   *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

B.   Find the length of PS and prove whether triangle PRS is a right triangle.

triangle

PS

right triangle

PRS

A triangle has all equalateral sides. And that it has angles of 80°.

80°
3°
80°

A right triangle does not have all equalateral sides

80° 150°
150°

I think that PS is not a right triangle because all of the sides are equalateral. And they are also congrewent to one another.

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.

Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.
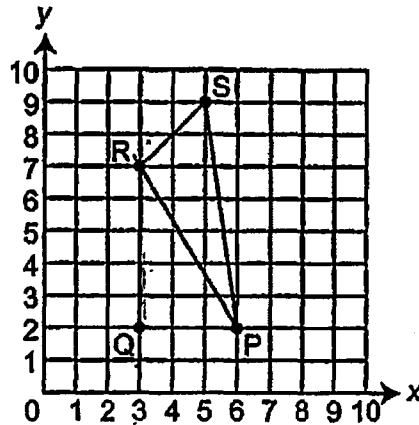
$$5^2 + 3^2 = c^2$$
$$25 + 9 = c^2$$
$$\sqrt{34} = \sqrt{c^2}$$
$$\boxed{5.83}$$

I got side RQ by counting the blocks from 2 to 7. I noticed they go up by one. So I counted by one and got 5. Next I got side QP by counting by one from 3 to 6 on the graph. I got 3. After

that I plugged these numbers into the Pythagorean theorem formula, solved and got 5.83 for side PR.

74. *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = √8 units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.

$$2.83^2 + 5.83^2 = c^2$$

Sides A – 2.83
B – 5.83
C – 6.48

$$8.0089 + 33.9889 = c^2$$

$$\sqrt{42} \; \sqrt{c^2}$$

$$\boxed{6.48}$$

Yes it is a right angle triangle because this number is larger than the sides A and B.

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.
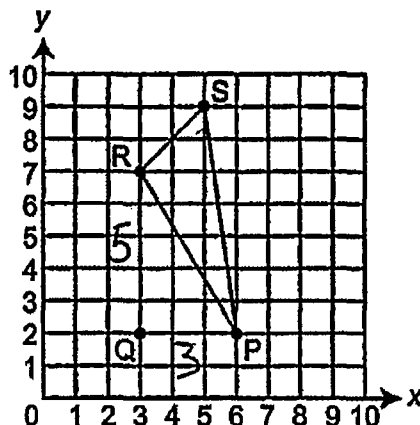
Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

$$5^2 + 3^2 = C^2$$

I Know to use 5 because from Q to R it goes up 5 and from Q to P it goes over 3 which then give me my a and my b.

74.   *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = √8 units.

B.   Find the length of PS and prove whether triangle PRS is a right triangle.

The length from P to S is 7. Its not a right triangle.

---

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.

Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

$PR = \sqrt{34}$ units

I know what values to use in the equation because of the coordinates in each point. R has (3,7); Q has (3,2), and P has (6,2). Using the y-values in R and Q, you can solve the difference is 5, so that is one value to substitute. Then you can use the x-values in Q and P. The difference/distance is 3. 5 and 3 would then go into the Pythagorean Theorem making it: $3^2 + 5^2 = c^2$.
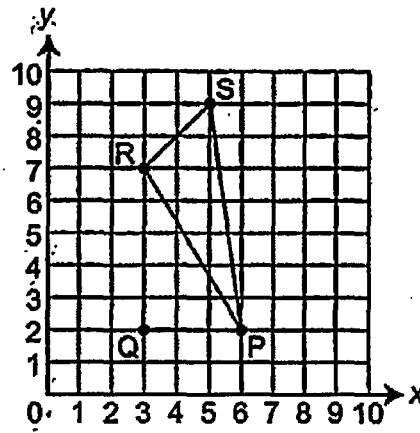
74. *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.

$$PS = \sqrt{(5-6)^2 + (9-2)^2}$$
$$\sqrt{-1^2 + 7^2}$$
$$\sqrt{1 + 49}$$
$$\sqrt{50}$$

$$\boxed{PS = \sqrt{50} \text{ units}}$$

Triangle PRS is not a right triangle because RS and PS are not perpendicular. Triangle PQR is though. If point S was at the coordinates of (6,10); it would then be a right triangle. So in conclusion, Triangle PRS isn't a right triangle because RS and PS aren't perpendicular, unless point S had the same x value, but not y value.

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.
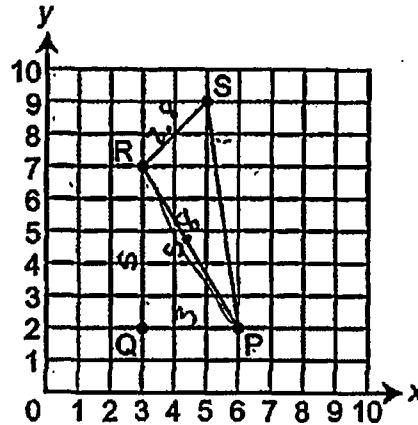
Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

$a^2 + b^2 = c^2$

$3^2 + 5^2 = c^2$

$9 + 25 = c^2$

$\sqrt{34} = \sqrt{c^2}$

$5.8 = c$

Side PR is 5.8.

I know the Pythagorean theorem is used to find either the hypotenuse or one of the legs of a right triangle and the formula is $a^2 + b^2 = c^2$. In triangle PQR, I know side QP is 3 blocks and side RQ is 5 blocks. After you plug these numbers into the Pythagorean theorem and solve, you find that the hypotenuse, or side PR is 5.8 blocks.

74. *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.

$\sqrt{8} = 2.8$

$a^2 + b^2 = c^2$

$2.8^2 + 5.8^2 = c^2$

$7.84 + 33.64 = c^2$

$\sqrt{41.48} = \sqrt{c^2}$

$6.4 = c$

The length of PS is 6.4 blocks. It is not a right triangle because there isn't an angle that is equal to 90°.

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.
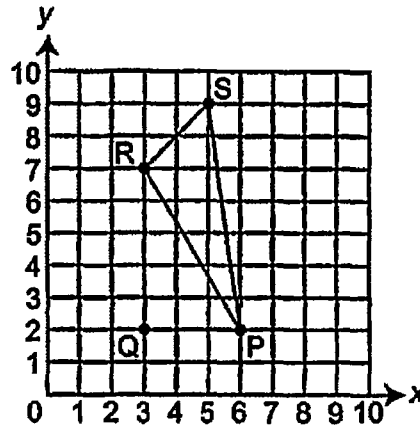
Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

$3^2 + 5^2 = C^2$

$9 + 25 = C^2$

$34 = C^2$

$\sqrt{34} = \sqrt{C^2}$

$C = 5.83$

The length of side PR is about 5.83 units long. To find which values to use in the Pythagorean theorem, I used the values on the graph. Side PQ ran from (3,2) to (6,2). So, it found the difference of 6 and 3, and found that the length was 3 units. Then, to find side QR, I found the end points at points (3,2) and (3,7). The difference of 7 and 2 is 5. So, side QR is 5 units long. That is how I found the values to use for the Pythagorean theorem.

**74.** *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.

$$a^2 + b^2 = c^2$$

$$(\sqrt{8})^2 + (5.83)^2 = c^2$$

$$8 + 34 = c^2$$

$$\sqrt{c^2} = \sqrt{42}$$

$$c = 6.48$$

$$1^2 + 7^2 = c^2$$

$$1 + 49 = c^2$$

$$\sqrt{50} = k^2$$

$$c = 7.07$$

The length of PS is 7.07 units. When solving the Pythagorean theorem for triangle PRS, it says that side PS must be 6.48 units for PRS to be a right triangle. So PRS is not a right triangle.

---

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.
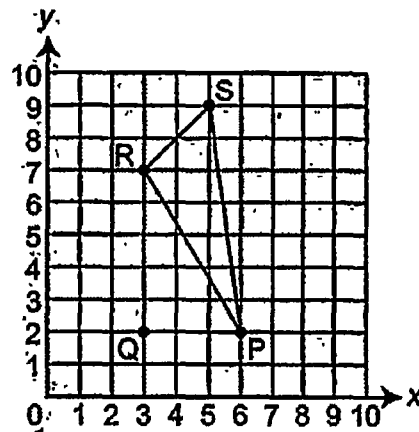
Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.
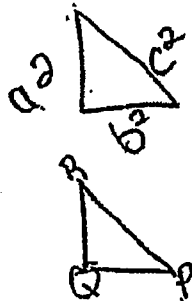
$$A^2 + B^2 = C^2$$

$$5^2 + 3^2 = C^2$$

$$25 + 9 = C^2$$

$$34 = C^2$$

$$17 = C$$

The values are the blocks squared (^{2}), then you plus 2 blocks through the problem.

74.   *Continued.* Please refer to the previous page for task explanation:

Beth thinks triangle PRS looks like a right triangle. She knows that RS = √8 units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.

$$5^2 + 2^2 = c^2$$
$$25 + 4 = c^2$$
$$29 = c^2$$
$$c = 14.5$$

$$R^2 + P^2 = S^2$$

The triangle is not a right triangle because the angles dont equall it, & you can tell by just looking at it.

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.
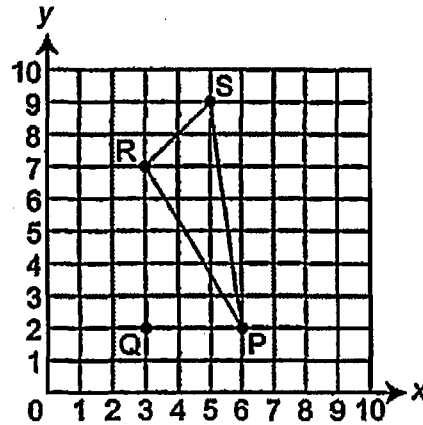
Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

the height is 5

the length is 3

74. *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = √8 units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.

no I+ is not A Right Angle is Bigger than the PRS

Subject: Math   Item: Triangles PQR and PRS   Grade: 8

Name   _____

Number	Score	Notes
T2-1		
T2-2		
T2-3		
T2-4		
T2-5		
T2-6		
T2-7		
T2-8		
T2-9		
T2-10		

PSSA, Grade 8 Math

Triangles PQR and PRS

Handscoring
Practice Set[*]

*Responses in this set do not have true scores. Apply scores based on scoring criteria.

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.
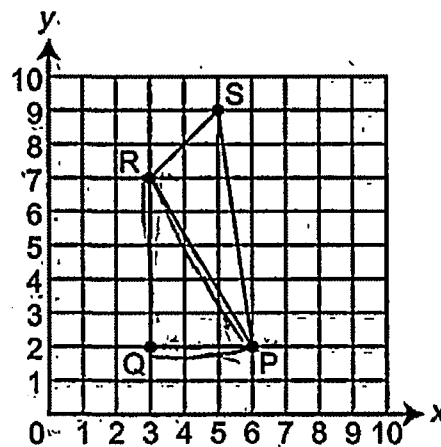
Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

$$3^2 + 5^2 = x^2$$

$$9 + 25 = x^2$$

$$\sqrt{34} = \sqrt{x^2}$$

5.8

I know which values to use in pythagorean theorem because the length of RQ is from 2 to 7 which is 5 in length. And for side QP is from 3 to 6 which 3 in length.

74. *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = √8 units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.

$1^2 + 7^2 =$

$144 = x^2$

$\sqrt{50} = \sqrt{x^2}$

$7.07 = x$

$2.83^2 + 5.8^2 = 7.07^2$

$8.0089 + 33.64 = 49.9849$

$41.6489 = 49.9849$

No, this is not a right triangle.

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74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.
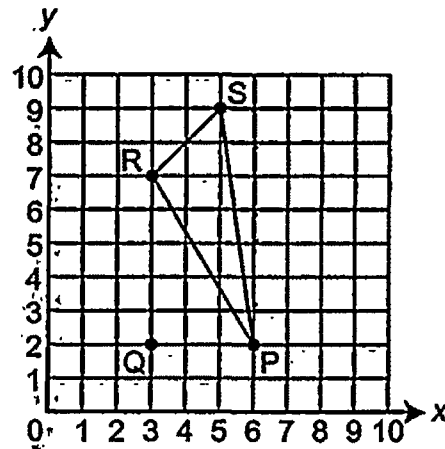
Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

$$a^2 + b^2 = c^2$$
$$6^2 + 7^2 = c^2$$
$$36 + 49 = 85$$

I used $a^2 + b^2 = c^2$ because you square the height and the base and the add them together.

74. *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.

The length between PS is 7 units and it is a right triangle because the length is 90°

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.

Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how
    you know which values to use in the Pythagorean theorem.

$A^2 + B^2 = C^2$

$3^2 + 5^2 = C^2$

$9 + 25 = C^2$

$C^2 = 64$

$C = \sqrt{34}$

$PR = \sqrt{34}$

I know which values to put in the one in the pythagorean theorem by doing the distance formula on graph paper. The formula is $\sqrt{(x'-x'')^2 + (y'+y'')^2}$. I used the formula to find the lengths of the legs which I then put into one in the Pythagoran theorem.
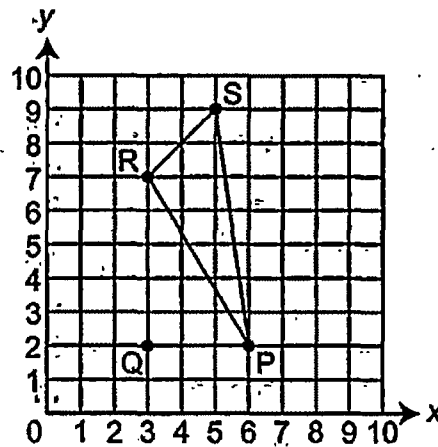
74.   *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

B.   Find the length of PS and prove whether triangle PRS is a right triangle.

Distance Formula = $\sqrt{(x^1-x^2)^2 + (y^1-y^2)^2}$

$PS = \sqrt{(6-5)^2 + (2-9)^2}$

$\sqrt{1 + 49}$

$\sqrt{50}$

$\boxed{PS = \sqrt{50}}$

$\sqrt{6}^2 + \sqrt{34}^2 = \sqrt{50}^2$

$8 + 34 = 50$

$42 \neq 50$

$\triangle PRS$ is not a Right triangle

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.
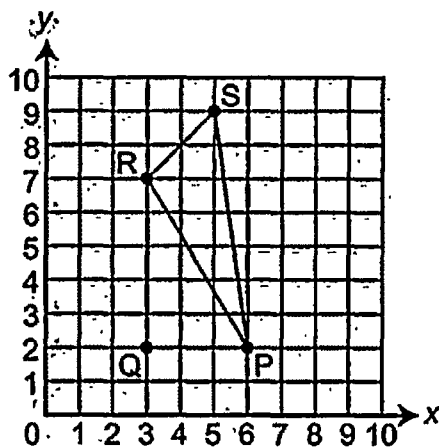
Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how
    you know which values to use in the Pythagorean theorem.

$5^2 + 3^2 = c^2$

$25 + 9 = c^2$

$\sqrt{34} = \sqrt{c^2}$

$5.831 \approx c$

I knew I had two use A, B. to find c
so thats what I did. I took $5^2 + 3^2 = c^2$
than you add it, and square it down. PR
are the hypotuense, than that is what I need
to find.

74. *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.

$2.83 + 5.831 = c^2$

$\sqrt{8.661} = \sqrt{c^2}$

$2.94 = c$

I don't think if a right angle because all the sides are less than 90° and has none.

74.   The figure below shows triangles PQR and PRS, which share two vertices, P and R.

Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how
    you know which values to use in the Pythagorean theorem.
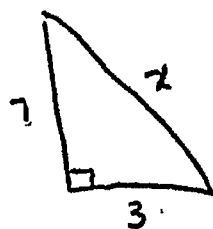
$x = 7.61$

I determined the values
by using the graph to
count out how long
the legs are

74.   ***Continued.*** **Please refer to the previous page for task explanation.**

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.
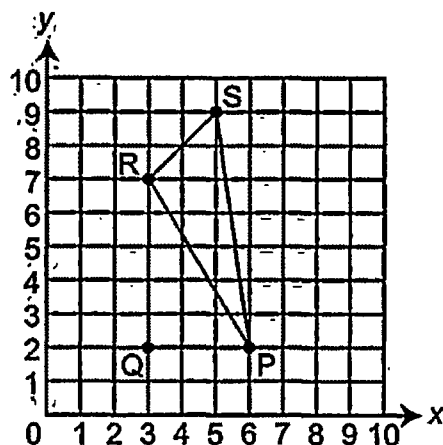
B.   Find the length of PS and prove whether triangle PRS is a right triangle.

Triangle PRS is
not a right angle
because the lines
form a wider
angle.

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.

Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

$$5^2 + 3^2 = C^2$$
$$25 + 9 = C^2$$
$$\sqrt{34} = \sqrt{C^2}$$
$$C = 5.83$$

(PR is 5.83)

You know which values to use in the Pythagorean Theorem because C will be the longest side and a and b are just the legs. To find out their length (for a+b) all you do is add the tiles or squares on the grid and that will be your measurement.

74. *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.

$$5.83^2 + 2.83^2 = c^2$$

$$33.91 + 8.01 = c^2$$

$$\sqrt{41.91} = \sqrt{c^2}$$

$$\boxed{6.47 = c}$$

The triangle PRS is not a right triangle. The Pythagorean Theorem does not turn out good for triangle PRS and PRS is not a right triangle.

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.
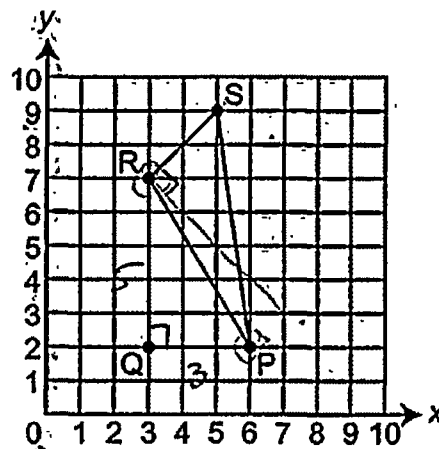
Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.
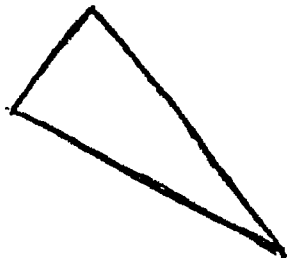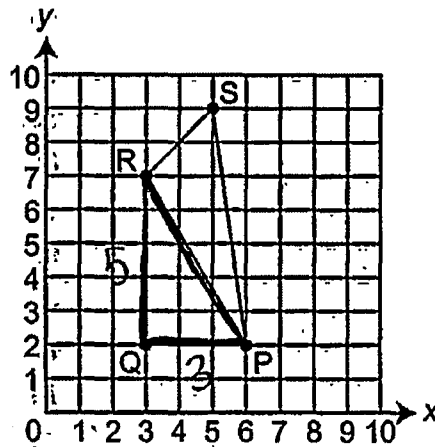
$$5^2 + 3^2 = c^2$$

$$25 + 9 = c^2$$

$$34 = c^2$$

$$c = \sqrt{34} \Rightarrow 5.8$$

$$PR = \sqrt{34} \Rightarrow 5.8$$

You know which values to use in the theorem because the two legs $(a^2 + b^2)$ which were 5 and 3 go on one side of the equation, and the side opposite the right angle (c^2) which is PR, goes on the other side of the equation.

hypotenuse

$$\underbrace{a^2 + b^2}_{Legs} = \underbrace{c^2}_{hypotenuse}$$

74. *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

**B.** Find the length of PS and prove whether triangle PRS is a right triangle.

$RS = \sqrt{8}$

$P(6, 2)$

$S(5, 9)$

$PS \sqrt{(2-9)^2 + (6-5)^2}$

$\sqrt{-7^2 + 1^2}$

$\sqrt{49 + 1} \Rightarrow \sqrt{50}$

$\boxed{PS = \sqrt{50}}$

$a^2 + b^2 = c^2$

$RS^2 + PR^2 = PS^2$

$\sqrt{8}^2 + \sqrt{34}^2 = \sqrt{50}^2$

$8 + 34 = 50$

$42 \neq 50$

$\boxed{PS = \sqrt{50} \approx 7.07}$ When plugged correctly into the pythagorean theorem, the two sides do not equal each other, therefore $\triangle PRS$ is not a right triangle.

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.

Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

$5^2 + 3^2 = c^2$

$25 + 9 = c^2$

$\sqrt{34} = \sqrt{c^2}$

$\boxed{5.83}$

74. *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.

It's not a right triangle

$$5.83^2 + 2.82^2 = c^2$$

$$33.98 + 7.95 = c^2$$

$$\sqrt{41.93} = \sqrt{c^2}$$

$$6.47$$

$$5.83 + 2.82 = 6.47$$

$$8.65 \neq 6.47$$

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.
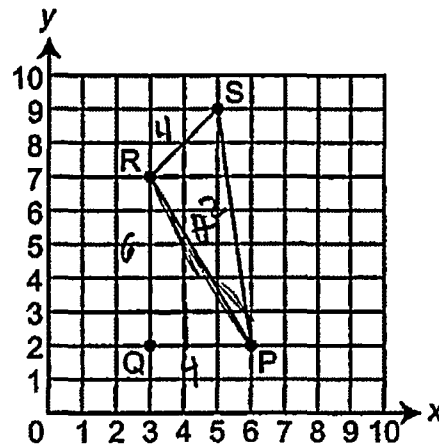
Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

Well you just count how many blocks the shape takes up.

$$6^2 + 4^2 = c^2$$

$$36 + 16 = \sqrt{52}$$

about 7.2

74. *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = √8 units.

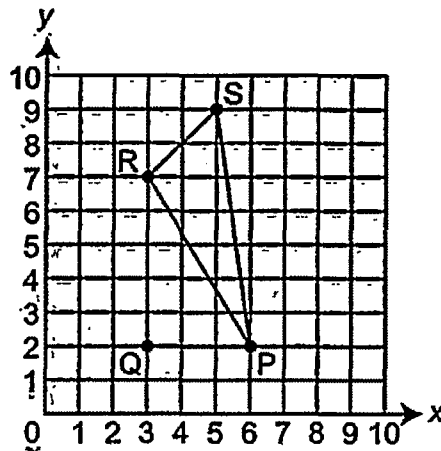**B.** Find the length of PS and prove whether triangle PRS is a right triangle.

$$6^2 + 4^2 + 7^2 = \sqrt{}$$

$$36 + 16 + 7.2^2 = \sqrt{}$$

$$\vee$$

$$52 + 7.2^2$$

$$\searrow$$

$$52 + 52 = \sqrt{104}$$

$$\Downarrow$$

Side PS = 10. 2 units

74. The figure below shows triangles PQR and PRS, which share two vertices, P and R.
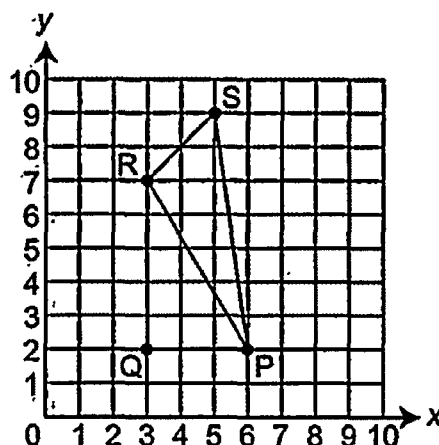
Triangle PQR is a right triangle.

A. Use the Pythagorean theorem to determine the length of side PR. Explain how you know which values to use in the Pythagorean theorem.

Show	Explain
$a^2 + b^2 = c^2$ $3^2 + 5^2 = c^2$ $9 + 25 = c^2$ $\sqrt{34} = \sqrt{c^2}$ $\sqrt{34} = c$	When working in a graph you just count the number of lines in the graph from point to point to find the length of that line segment.

74. *Continued.* Please refer to the previous page for task explanation.

Beth thinks triangle PRS looks like a right triangle. She knows that RS = $\sqrt{8}$ units.

B. Find the length of PS and prove whether triangle PRS is a right triangle.

$$c^2 \neq b^2 + a^2$$
$$c^2 = \sqrt{8}^2 + \sqrt{34}^2$$
$$c^2 \doteq 8 + 34$$
$$\sqrt{c^2} = \sqrt{42}$$
$$c = \sqrt{42}$$

$$a^2 + b^2 = c^2$$
$$\sqrt{8}^2 + \sqrt{34}^2 = \sqrt{42}^2$$
$$8 + 34 = 42$$
$$\boxed{42 = 42}$$

When $a^2 + b^2 = c^2$ works and you get two numbers that equal each other you know you have a right triangle.

PRACTICE SET*

Subject: Math   **Item: Triangle PQR and PRS**   **Grade: 8**

Name_____

Number	Score	Consensus	Notes
P-1			
P-2			
P-3			
P-4			
P-5			
P-6			
P-7			
P-8			
P-9			
P-10			

* Responses in this set do not have true scores. Apply scores based on scoring criteria.

PSSA, Grade 8 Math

Triangles PQR and PRS

Handscoring

Training Sets 1 and 2
True Scores/Annotations

Page	Score	Description
1	2	A. 2 points – correct answer, complete support. B. 0 points – incorrect answer and support.
2	1	A. 1.5 points – correct answer and correct but incomplete support (substituted correctly into the formula but the explanation for which values to use is insufficient). B. 0 points – incorrect answer and support.
3	4	A. 2 points – correct answer and complete support. B. 2 points – correct answer and complete support.
4	0	Nothing is correct for credit in either part. There is no credit for just giving the formula, and there is no clear understanding of either the substitutions into the formula or which values to use.
5	3	A. 1.5 points – correct answer, correct but incomplete support (5 and 3 are on the figure, but there is no explanation to go with them). B. 2 points – correct answer and complete support.
6	0	Nothing is correct for credit in either part.
7	2	A. 2 points – correct answer and complete support (values are shown on triangle drawn at left, in addition to minimal explanation). B. 0.5 point – incorrect answer for the length of PS, correct but incomplete support (found $\sqrt{42}$).
8	1	A. 0.5 point – incorrect answer, correct but incomplete support (attempt to solve for PR using the Pythagorean theorem). B. 0 points – incorrect answer and support.
9	2	A. 2 points – correct answer and complete support. B. 0.5 point – incorrect answer for the length of PS, correct but incomplete support (found $\sqrt{36.95}$ which would have been $\sqrt{42}$, but there is a copy error, 5.38 instead of 5.83).
10	4	A. 2 points – correct answer and complete support. B. 2 points – correct answer and complete support.

Page	Score	Description
1	1	A. 0.5 point – incorrect answer due to a calculation error, correct but incomplete support (the explanation for which values to use is insufficient). B. 0.5 point – incorrect answer for the length of PS, correct but incomplete support (found what would be $\sqrt{42}$, based on the calc error in Part A).
2	4	A. 2 points – correct answer and complete support. B. 2 points – correct answer and complete support.
3	0	Nothing is correct for credit in either part.
4	2	A. 2 points – correct answer and complete support. B. 0.5 point – incorrect answer for the length of PS, correct but incomplete support (found $\sqrt{42}$).
5	1	A. 1 point – no answer given, complete support. B. 0 points – incorrect answer, insufficient support for any credit.
6	3	A. 2 points – correct answer and complete support. B. 1.5 points – correct answer and correct but incomplete support (did not find and compare to $\sqrt{42}$).
7	2	A. 2 points – correct answer and complete support. B. 0.5 point – incorrect answer for the length of PS, correct but incomplete support (found $\sqrt{42}$).
8	4	A. 2 points – correct answer and complete support. B. 2 points – correct answer and complete support.
9	1	A. 1 point – incorrect answer, complete support. B. 0 points – incorrect answer and support.
10	0	Nothing is correct for credit in either part.

PSSA, Grade 8 Math

Handscoring
Nonscorable Codes

PENNSYLVANIA NONSCORABLE CODES

For PSSA Reading, Science, and Mathematics and all Keystone Open-ended Items (items with zero as a valid score point):

Nonscoreable Code	Definition/Example/Notes
B – Blank	Completely blank response. This includes responses that: • Are completely erased (so that words are unreadable) • Are completely crossed out (so that words are unreadable) • Online responses that consist solely of "white space" (e.g., spaces, tabs, returns)
R – Refusal	Response indicates a refusal to attempt the task. This includes: • *I don't care; I'm not taking this test; This is stupid; I won't do it; you can't make me answer this question* • *I don't know; IDK; we never learned this; X; NA* • *Unrelated song lyrics/rap lyrics/poetry (e.g., the lyrics to Hotel California in answer to a writing prompt asking whether backpacks should be allowed in class)* • *Intentionally off-task response (e.g., a detailed description of what the student ate for breakfast that morning in answer to a question about Mozart's childhood)* This also includes responses that consist solely of scribbles, random keystrokes (*yyyyyyy, av:aeoiahvb;e, hhrrttuuvv*), indecipherable writing/keystrokes (*swensts mengetstets arawnstets)* emoticons, stray marks, doodles, drawings, circles, underlines, a couple of random letters (not a word), copying the question and/or test directions, or other evidence that no attempt was made to address the task.
K – Off task/topic	Response makes no reference to the item or (if applicable) the passage provided, but does not seem to constitute an intentional refusal. If any part of the response relates to the item in any way, score the response.
F – Foreign Language	Responses written entirely in a language other than English. Note that mathematics responses may still be scoreable if they also contain mathematical language (numbers, operators, etc.) that can be assessed by the rubric. Also note that a Spanish language version of the test is available for students for mathematics and science assessments. These are scored by qualified Spanish-speaking scorers.
U – Illegible	This category includes: • Responses that are completely illegible due to poor handwriting.* • Online or typed responses that are incoherent due to consisting of random strings of words that are not clearly a Refusal or Off Topic (e.g., *best day school teacher inspired so I rode my car*) * If a response is difficult to read, every effort is made to read the response. Multiple people, including a Team Leader and/or a Scoring Director, will attempt to decipher the response, and the original answer document will be reviewed if necessary. If, ultimately, only a portion of the response is legible, that verbiage will be scored on its own merits.

Note: In reading, copied irrelevant text receives a score of 0.

Note: Responses that consist of a couple of words and do not represent a complete thought (e.g., *I think that*, *Ramps are*) receive a score of 0.

Note: Crossed out, but legible/partially legible, responses are scored according to the rubric based on whatever verbiage is legible.