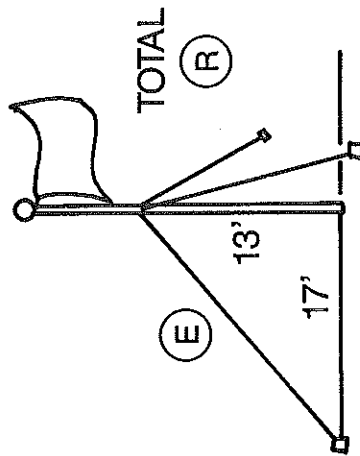


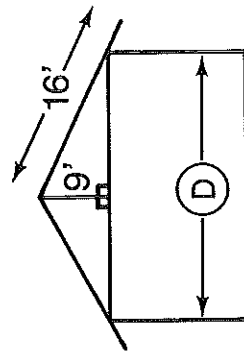
How Do You Give A Torn Valentine?

Use the Pythagorean Theorem to determine each dimension labeled with a circled letter. Write the letter in the box or boxes at the bottom of the page that contain the same answer.

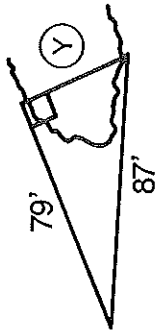
1. Three wires are supporting a flagpole. They are attached to the pole 13 feet above the ground and attached to stakes 17 feet from the base of the pole. Find the length indicated. Allowing 2 feet per wire for making the attachments, how much wire is needed?



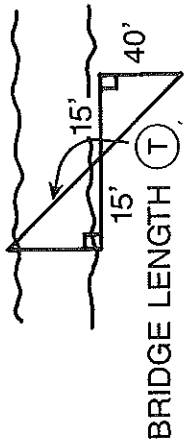
2. A roof is to be constructed as shown. Allowing a one-foot overhang, how wide is the building?



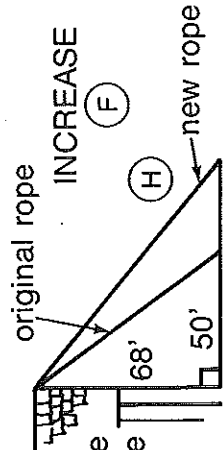
3. Scouts are to determine the width of the lake between the points shown. How wide is the lake?



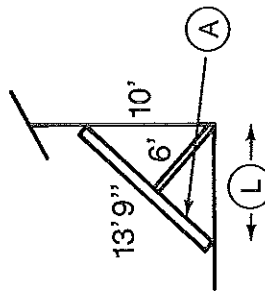
4. A bridge is to be constructed across the stream. Given 5 feet on each side to anchor it, how long would the bridge have to be?



5. A rope is stretched from the top of a barn. Original measures are shown, but the rope must move out from the barn an additional 40%. How much longer must the rope be?



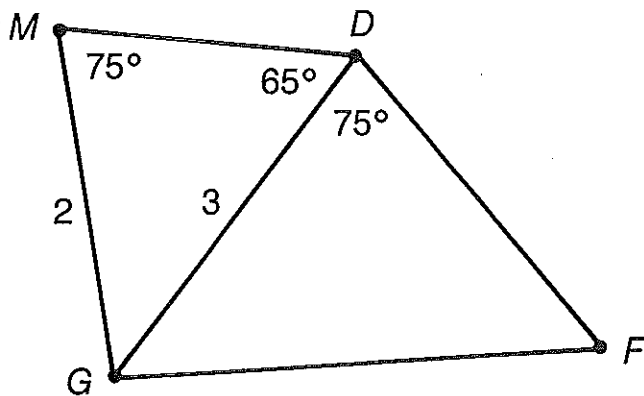
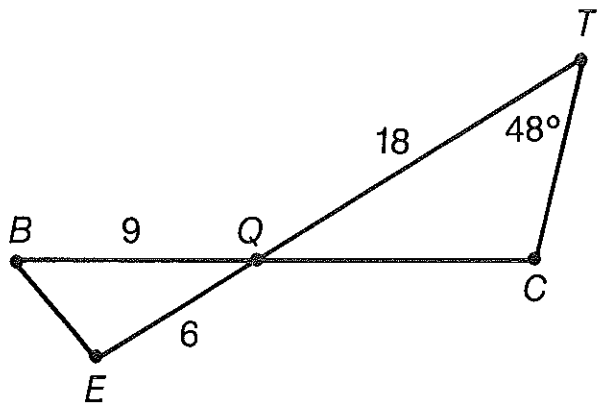
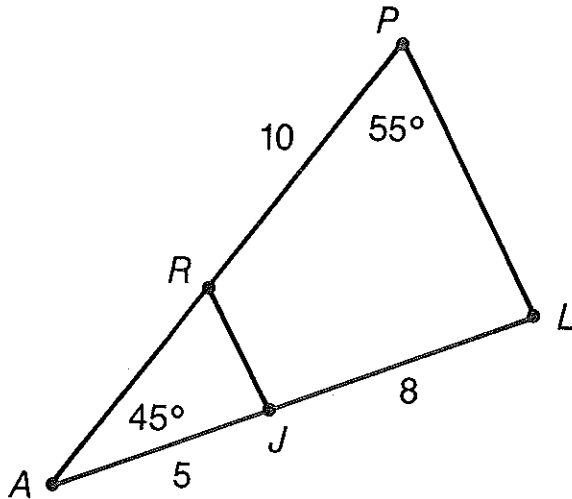
6. A solar panel is positioned as shown. A brace is set perpendicular to the panel. Determine the two dimensions shown.



97'7"	5'9"	8'4"	13'2"	97'7"	21'5"	5'9"	70'3"	52'9"	21'5"	24'	8'4"	36'5"
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Hapless Headlines

In each row, find one statement that would lead to two of the given triangles being similar. Cross out the letters above that statement. The remaining letters will spell out the headline.



1.	FOR $m\angle PRJ = 115$	TUN $m\angle JRA = 55$	ME $m\angle ALP = 90$
2.	RAY $m\angle AJR = 80$	RL $m\angle ALP = 90$	YH $m\angle ARJ = 45$
3.	AUN $AR = \frac{50}{13}$	HIR $AR = 6\frac{1}{4}$	TE $AR = 4$
4.	DH $m\angle E = 42$	OV $m\angle B = 48$	OU $m\angle BQE = 48$
5.	SEI $QC = 21$	SR $QC = 9$	ROW $QC = 12$
6.	EP $GF = 6$	OSS $FD = 4$	IT $GF = 4\frac{1}{2}$
7.	ON $m\angle F = 40$	ES $m\angle F = 75$	SED $m\angle G = 15$

What Did the Girl Melon Say When the Boy Melon Proposed Marriage?

Circle the number-letter pair next to each TRUE statement below. Write the letter in the matching numbered box at the bottom of the page. (Hint: You should circle eight number-letter pairs in each column.)

3-S	$(x + 5)(x + 2) = x^2 + 7x + 10$	5-U	$(2w - 6)(5w + 4) = 10w^2 - 22w - 24$
9-A	$(t - 7)(t - 1) = t^2 - 8t + 7$	8-D	$(8x - 1)(4x + 3) = 32x^2 + 24x - 3$
6-L	$(n - 9)(n - 3) = n^2 - 6n + 27$	11-T	$(3x + 2)(3x - 2) = 9x^2 - 4$
16-E	$(u - 3)(u + 6) = u^2 + 3u - 18$	4-B	$(a + b)(2a + b) = 2a^2 + 3ab + b^2$
6-T	$(a + 9)(a - 8) = a^2 + a - 72$	15-A	$(2c + 6d)(c - d) = 2c^2 + 8cd - 6d^2$
7-R	$(x + 4)(x - 10) = x^2 - 14x - 40$	2-E	$(4x - y)(3x + 2y) = 12x^2 + 5xy - 2y^2$
14-O	$(3m + 1)(m + 5) = 3m^2 + 16m + 5$	8-C	$(2u - 5v)(2u - 8v) = 4u^2 - 26uv + 40v^2$
5-N	$(8d + 3)(2d + 1) = 16d^2 + 14d + 4$	10-P	$(9a + b)(2a + 5b) = 18a^2 + 47ab - 5b^2$
7-I	$(2k - 4)(3k - 2) = 6k^2 - 16k + 8$	13-R	$(2a - 2b)(a + 10b) = 2a^2 - 8ab - 20b^2$
12-E	$(x + 8)(2x - 6) = 2x^2 + 10x - 48$	15-P	$(7m + n)(m - 3n) = 7m^2 - 20mn - 3n^2$
2-A	$(4n - 2)(n + 5) = 4n^2 + 22n - 10$	10-N	$(x^2 - 4)(x^2 - 9) = x^4 - 13x^2 + 36$
1-Y	$(3v - 2)(5v + 4) = 15v^2 + 2v - 8$	3-D	$(k^2 - 6)(k^2 + 3) = k^4 - 9k^2 - 18$
11-I	$(2y + 9)(3y - 1) = 5y^2 + 25y - 9$	13-L	$(x^2 + 2y)(x^2 - 2y) = x^4 - 4y^2$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
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Why Didn't Klutz Do Any Homework on Saturday?



Either multiply or factor, as directed, and find your answer in the adjacent answer column. Write the letter of that exercise in the box that contains the number of the answer.

Multiply:

- ① $(a + 5)(a - 5)$ ④ $16a^2 - b^2$
 ② $(2 + 3a)(2 - 3a)$ ⑬ $49a^2 - 1$
 ③ $(7a - 1)(7a + 1)$ ⑥ $a^2 - 25$
 ④ $(a^2 - 6)(a^2 + 6)$ ⑰ $4a^4 - 25b^2$
 ⑤ $(4a + b)(4a - b)$ ⑱ $4 - 9a^2$
 ⑥ $(2a^2 - 5b)(2a^2 + 5b)$ ⑲ $4a^4 - 36$
 ⑦ $a^4 - 36$

Factor:

- ③ $(9x + 10y)(9x - 10y)$
 ⑤ $(x + y)(x - y)$
 ⑦ $(x^2 + 20)(x^2 - 20)$
 ⑪ $(6x + 11y)(6x - 11y)$
 ⑫ $(3x + 7y)(3x - 7y)$
 ⑭ $(2x + 7y)(2x - 7y)$
 ⑮ $(3x + 8y)(3x - 8y)$
 ⑳ $x^2 - y^2$
 ㉑ $4x^2 - 49y^2$
 ㉒ $81x^2 - 100y^2$
 ㉓ $36x^2 - 121y^2$
 ㉔ $9x^2 - 64y^2$
 ㉕ $x^4 - 400$

Factor:

- ① $(2n + 3)(2n - 3)$
 ② $n^2 - 49$
 ③ $n^2 - 1$
 ④ $81 - n^2$
 ⑤ $4n^2 - 9$
 ⑥ $49n^2 - 16$
 ⑦ $144 - 25n^2$
 ⑧ $(12 + 5n)(12 - 5n)$
 ⑨ $(n + 1)(n - 1)$
 ⑩ $(7n + 3)(7n - 3)$
 ⑪ $(n + 7)(n - 7)$
 ⑫ $(9 + n)(9 - n)$
 ⑬ $(7n + 4)(7n - 4)$

Factor:

- ⑭ $a^6 - b^4$
 ⑮ $25a^8 - 9b^4$
 ⑯ $a^2b^2 - 36$
 ⑰ $16 - a^4b^6$
 ⑱ $a^2b^4 - c^8$
 ㉑ $4a^{16} - 225$
 ㉒ $(4 + a^2b^3)(4 - a^2b^3)$
 ㉓ $(2a^8 + 15)(2a^8 - 15)$
 ㉔ $(a^3 + b^2)(a^3 - b^2)$
 ㉕ $(ab^2 + c^4)(ab^2 - c^4)$
 ㉖ $(ab + 6)(ab - 6)$
 ㉗ $(5a^4 + 3b^2)(5a^4 - 3b^2)$
 ㉘ $(4 + ab^4)(4 - ab^4)$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
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