



Maryam Bint Sultan School- Cycle3
Cluster AD 2.9

Grade 10 Mathematics
Advanced Stream
Academic Year 2025/2026
EoT1 Exam Coverage in Term 1
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Model 11 Lesson 7: Factoring Special Products

FRQ - الأسئلة المقالية

21

Factor perfect square trinomials.

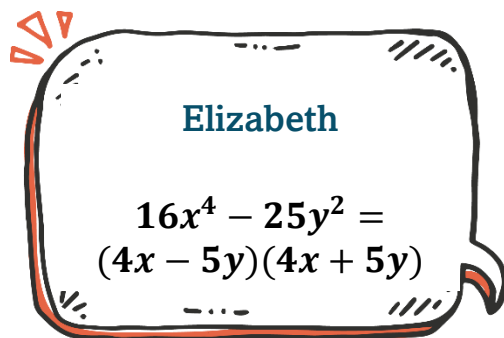
Exercise (60-70)

Page 682

60) **REASONING** Debony claims the expression $9x^2 + 50x + 25$ is a perfect square trinomial. Is she correct? If she is incorrect, show how the expression can be changed so that it is a perfect square.

61) **REASONING** Find a value for m that makes the expression $4x^4 - 44x^2 + m$ a perfect square and then use that value to factor the expression completely.

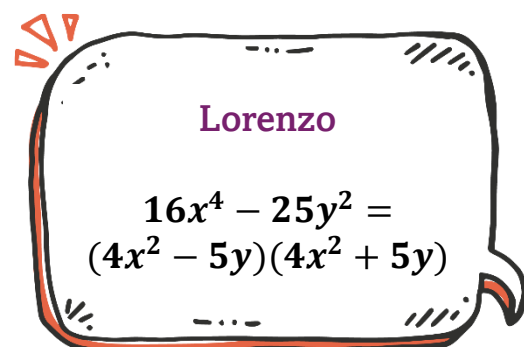
62) **FIND THE ERROR** Elizabeth and Lorenzo are factoring an expression. Is either of them, correct? Explain your reasoning.



Elizabeth

$$16x^4 - 25y^2 = (4x - 5y)(4x + 5y)$$

Elizabeth's work is shown in a speech bubble. The expression $16x^4 - 25y^2$ is factored as $(4x - 5y)(4x + 5y)$. There are red exclamation marks in the top left corner of the bubble.



Lorenzo

$$16x^4 - 25y^2 = (4x^2 - 5y)(4x^2 + 5y)$$

Lorenzo's work is shown in a speech bubble. The expression $16x^4 - 25y^2$ is factored as $(4x^2 - 5y)(4x^2 + 5y)$. There are red exclamation marks in the top left corner of the bubble.

63) **PERSEVERE** Factor and simplify $9 - (k + 3)^2$, a difference of squares.

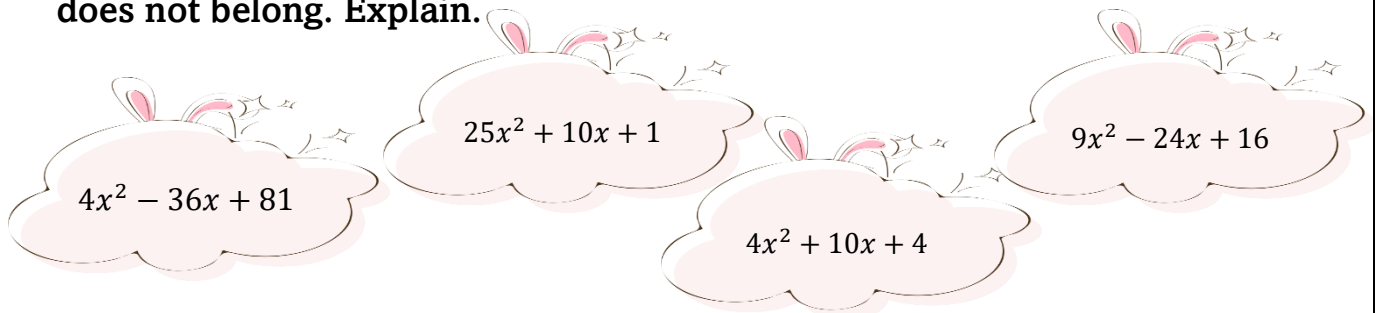
64) **ANALYZE** Write and factor a binomial that is the difference of two perfect squares and that has a greatest common factor of $5mk$.

65) **ANALYZE** Determine whether the following statement is true or false. Give an example or counterexample to justify your answer. All binomials that have a perfect square in each of the two terms can be factored.

66) **CREATE** Write a binomial in which the difference of squares pattern must be repeated to factor it completely. Then factor the binomial.

67) **WRITE:** Describe why the difference of squares has no middle term.

68) **WHICH ONE DOESN'T BELONG?** Identify the trinomial that does not belong. Explain.



69) **WRITE:** Explain how to determine whether a trinomial is a perfect square trinomial.

70) **PERSEVERE** Use the difference of squares to factor and simplify the expression $121x^2y^6z^4 - 16y^2z^2$

Model 11 Lesson 7: Factoring Special Products

MCQ - الأسئلة الموضوعية

4	Factorize binomials that are the difference of squares.	Exercise (15-17) & (42-44)	Page 679-680
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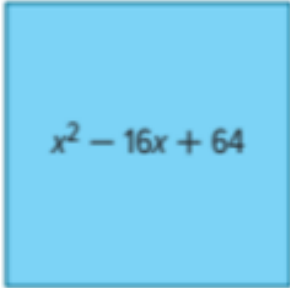
15. **TICKETING** A ticketing company for sporting events analyzes the ticket purchasing patterns. The expression $9a^2 - 4b^2$ is developed to help officials calculate the likely number of people who will buy tickets for a certain sporting event. **Factor the expression.**

16. **BASKETBALL COURT** A half-court basketball court is a square of pavement with an area represented by $x^2 - 25$. **Factor the expression.**

17. **DECORATING** Marvin saw a rug in a store that he would like to purchase. It has an area represented by the expression shown on the rug. He cannot remember the length and width, but he remembers that the length and the width were the same.

a. Factor the expression that represents the area of the rug.

b. What do the factors in the factored expression represent?


$$x^2 - 16x + 64$$

42) GARDEN DESIGN

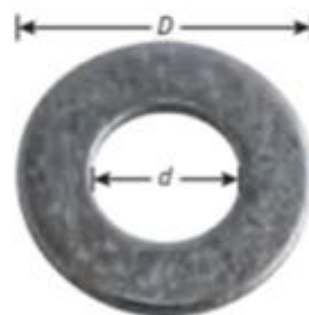
Marren is planning to build a raised garden bed. The area of the rectangular plot is given by the expression $x^2 - 49$. Factor this expression to find the possible length and width of the garden bed.



43) PARKING LOT

The area of a rectangular parking lot is given by the expression $a^2 - 25$, where the length is greater than the width. Factor the expression to find the possible dimensions of the parking lot. If the length is 105 yards, what is the width?

44. USE A SOURCE Research the dimensions of the outside diameter and inside diameter of metal washers. Write an expression for the surface area of the top of a metal washer with outside diameter D and inside diameter d . Factor your expression. Then use your expression and the dimensions you researched to find the surface area of the top of a metal washer.



Model 11 Lesson 6: Factoring Quadratic Trinomials

الأسئلة الموضوعية - MCQ

3	Factor trinomials of the form $ax^2 + bx + c$	Exercise (21-36) -(45-50) -(65-70)	Page 672-673
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Factor each polynomial, if possible. If the polynomial cannot be factored using integers, write prime.

21) $5x^2 + 34x + 24$

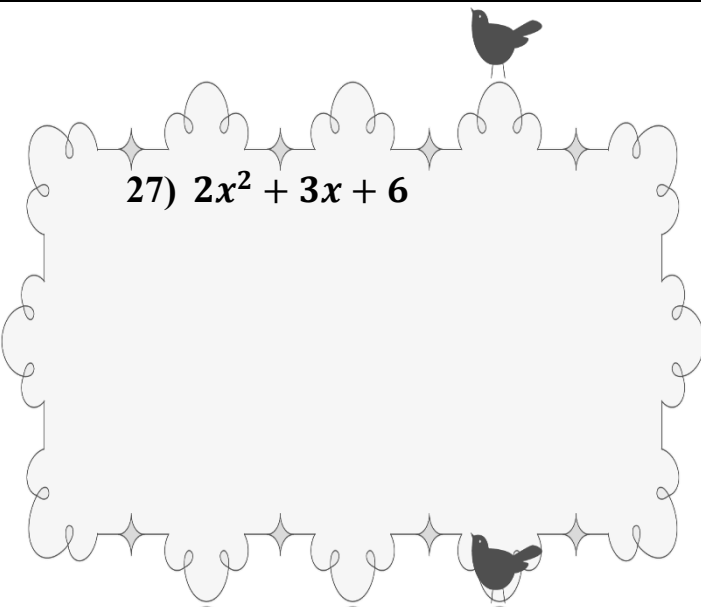
22) $2x^2 + 19x + 24$

23) $4x^2 + 22x + 10$

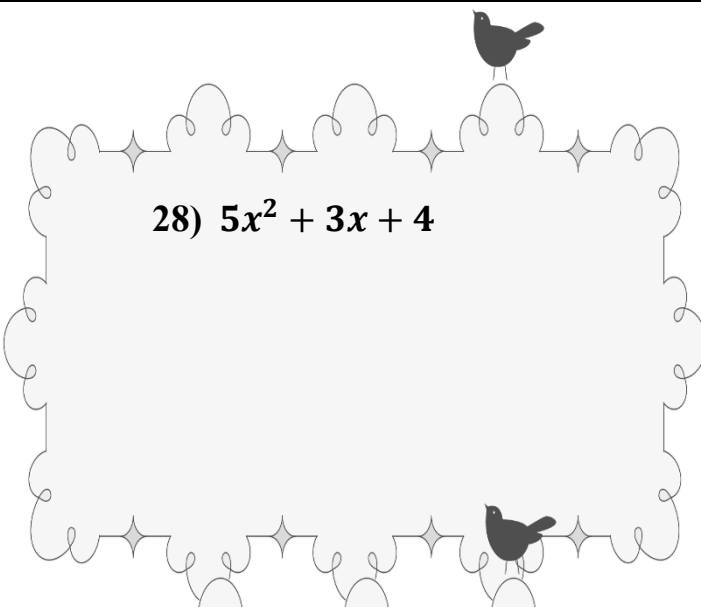
24) $4x^2 + 38x + 70$

25) $2x^2 - 3x - 9$

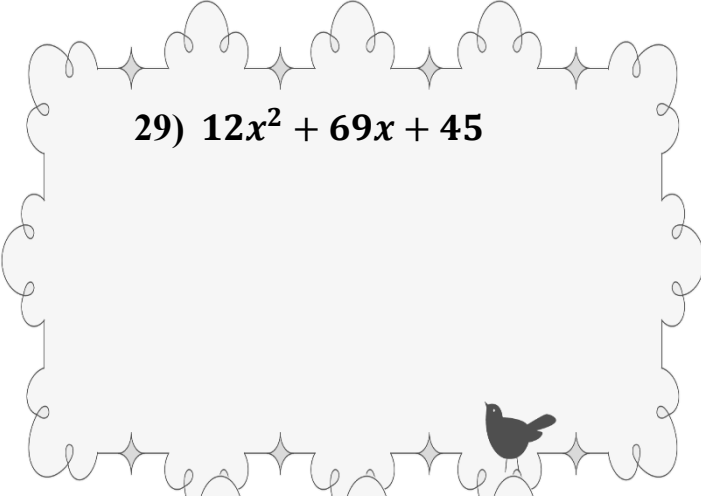
26) $4x^2 - 13x + 10$



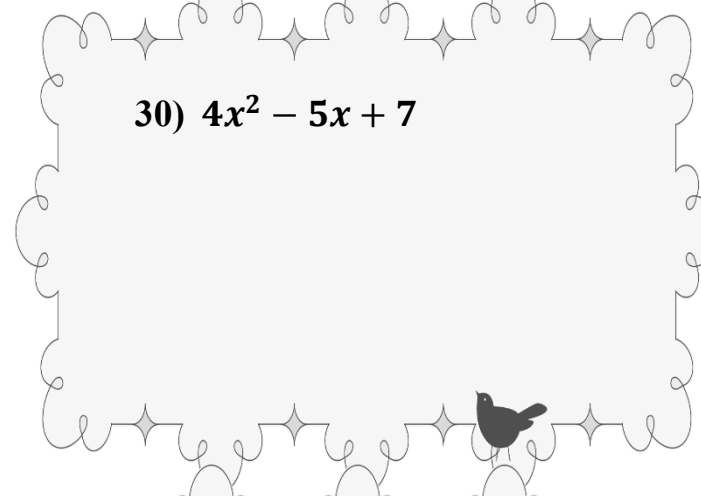
27) $2x^2 + 3x + 6$



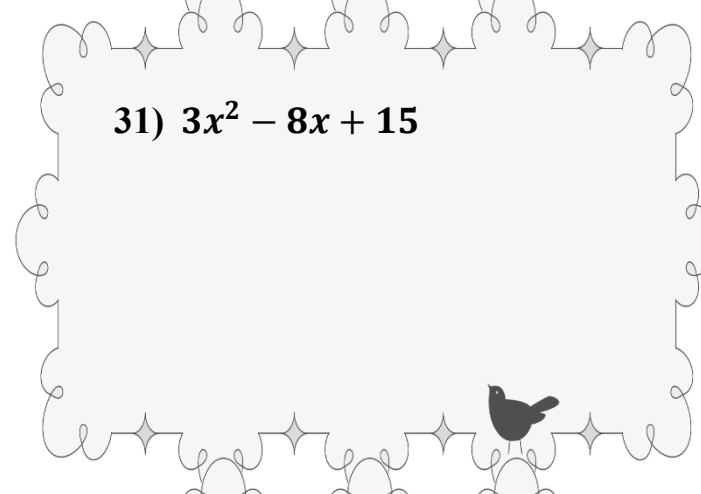
28) $5x^2 + 3x + 4$



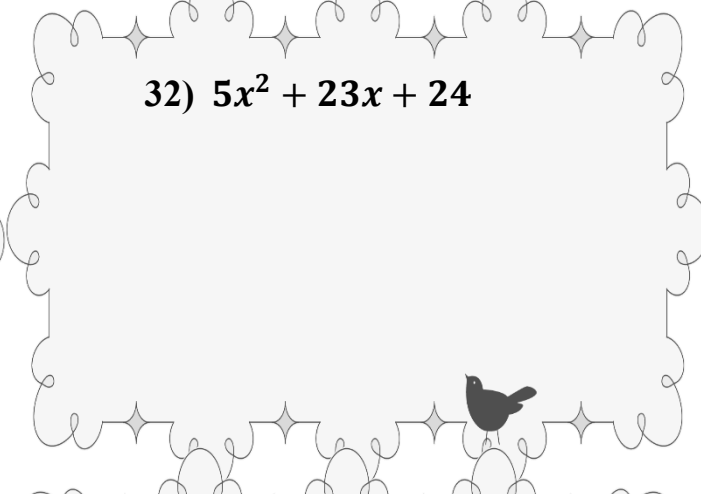
29) $12x^2 + 69x + 45$



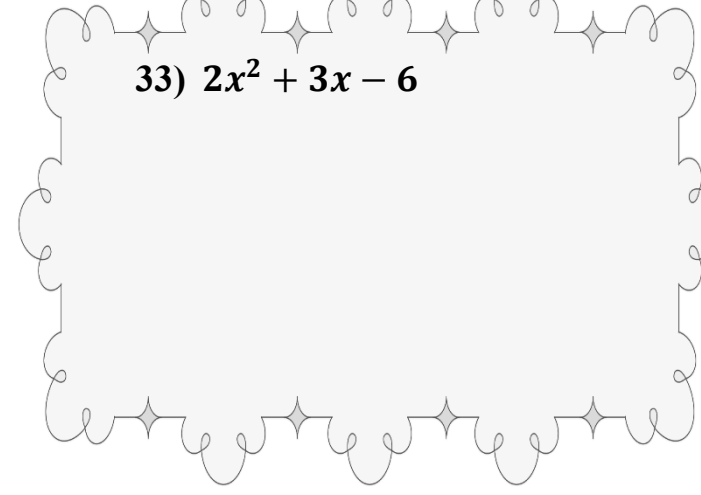
30) $4x^2 - 5x + 7$



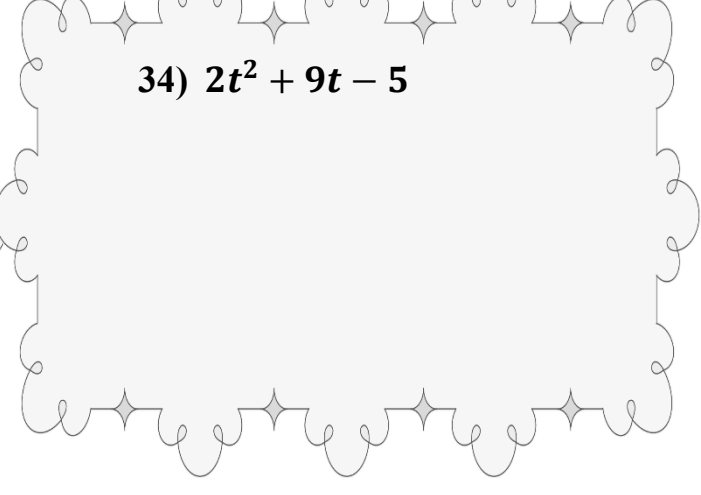
31) $3x^2 - 8x + 15$



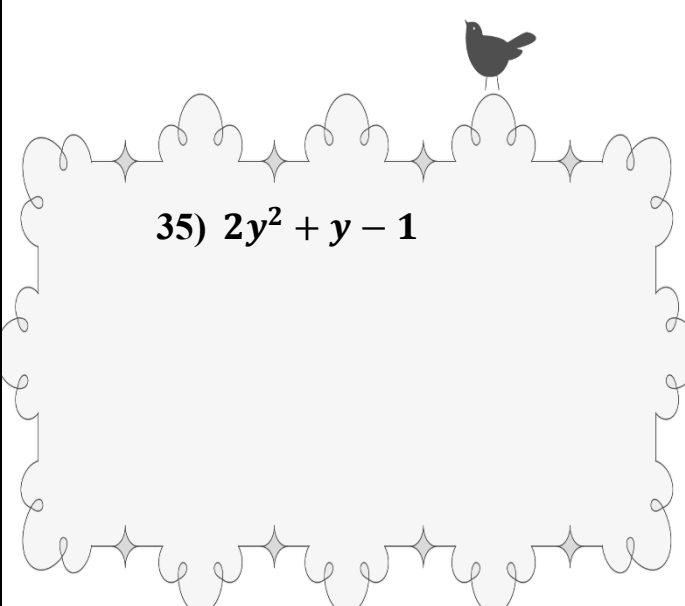
32) $5x^2 + 23x + 24$

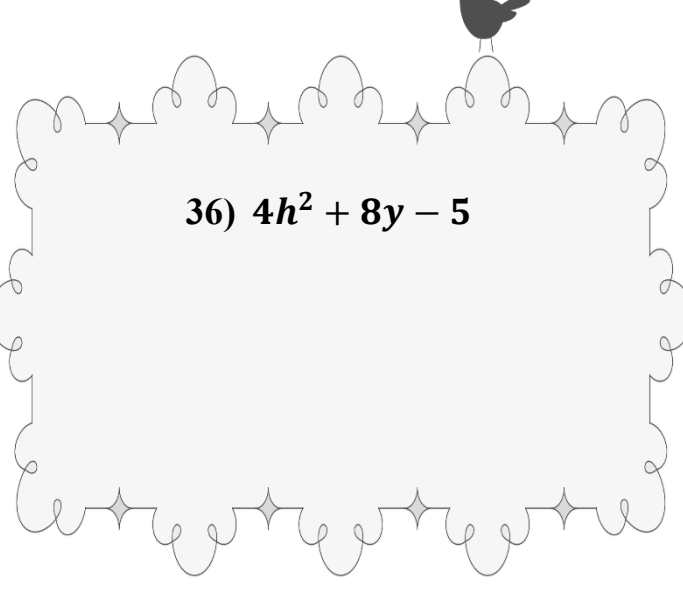


33) $2x^2 + 3x - 6$

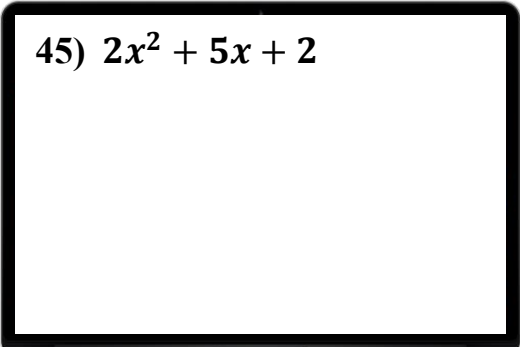


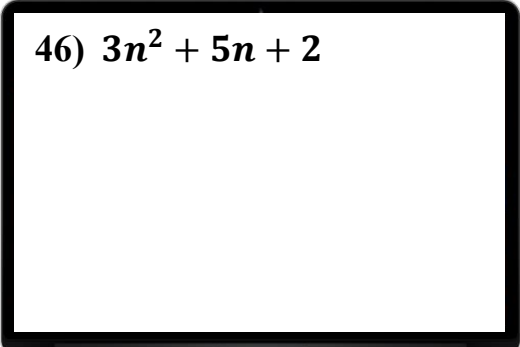
34) $2t^2 + 9t - 5$

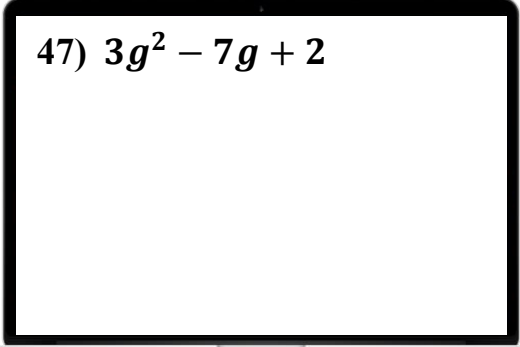

$$35) 2y^2 + y - 1$$

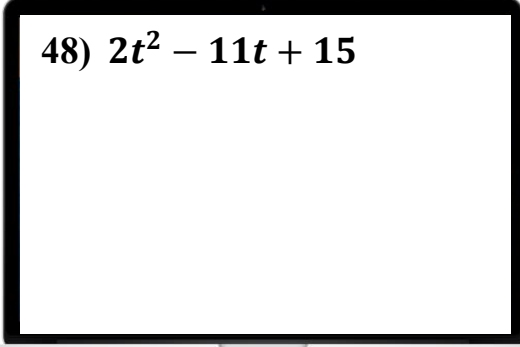

$$36) 4h^2 + 8y - 5$$

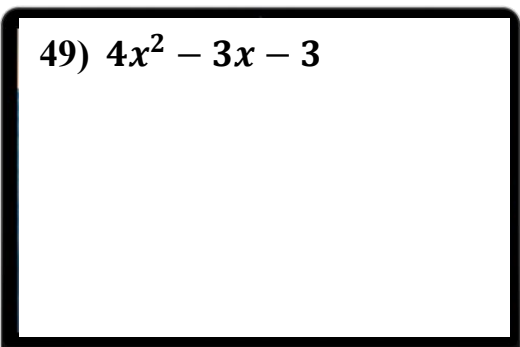
Factor each polynomial, if possible. If the polynomial cannot be factored using integers, write prime.

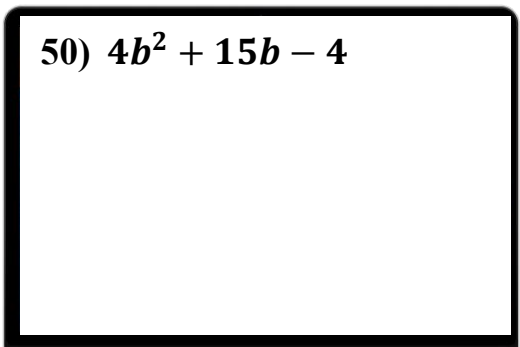

$$45) 2x^2 + 5x + 2$$


$$46) 3n^2 + 5n + 2$$


$$47) 3g^2 - 7g + 2$$


$$48) 2t^2 - 11t + 15$$


$$49) 4x^2 - 3x - 3$$


$$50) 4b^2 + 15b - 4$$

Factor each polynomial, if possible. If the polynomial cannot be factored using integers, write prime

65) $-6x^2 - 23x - 20$

66) $-4x^2 - 15x - 14$

67) $-5x^2 + 18x + 18$

68) $-6x^2 + 31x - 35$

69) $-4x^2 + 5x - 12$

70) $-12x^2 + x + 20$

Model 11 Lesson 3: Multiplying Polynomials

MCQ - الأسئلة الموضوعية

2

Multiply Polynomials by using
the Distributive Property

Exercise
(18-23) & (42-55)

Page
650-651

Find each product.

18. $(2y - 11)(y^2 - 3y + 2)$

19. $(4a + 7)(9a^2 + 2a - 7)$

20. $(m^2 - 5m + 4)(m^2 + 7m - 3)$

21. $(x^2 + 5x - 1)(5x^2 - 6x + 1)$

22. $(3b^3 - 4b - 7)(2b^2 - b - 9)$

23. $(6z^2 - 5z - 2)(3z^3 - 2z - 4)$

Find each product.

42. $(w + 4)(w^2 + 3w - 6)$

43. $(t + 1)(t^2 + 2t + 4)$

44. $(k - 4)(k^2 + 5k - 2)$

45. $(m + 3)(m^2 + 3m + 5)$

46. $(2x + 1)(x^2 - 3x - 4)$

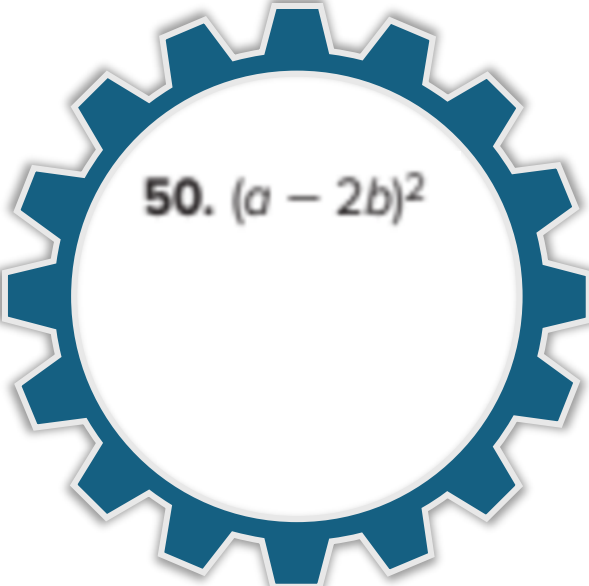
47. $(3b + 4)(2b^2 - b + 4)$

Simplify...

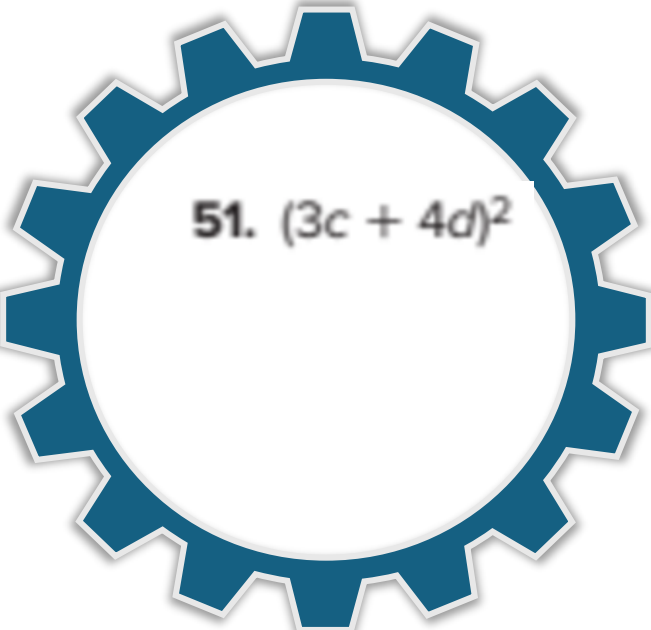
48) $(m + 2)(m^2 + 3m - 6) + (m^2 - 2m + 4)$

49) $[(t^2 + 3t - 8) - (t^2 - 2t + 6)](t - 4)$

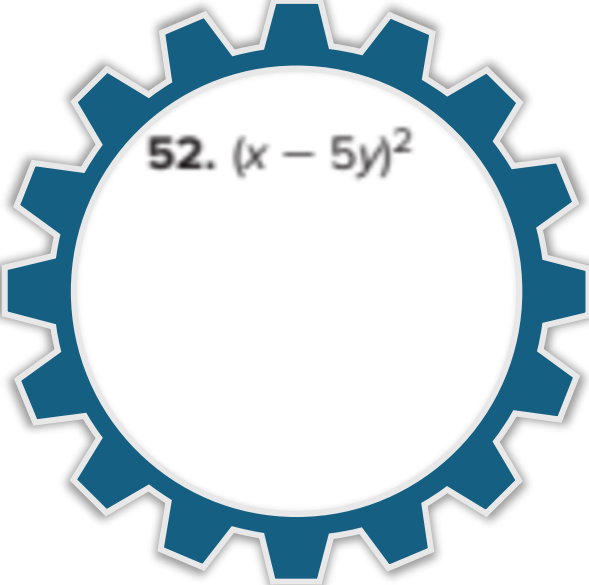
Find each product.



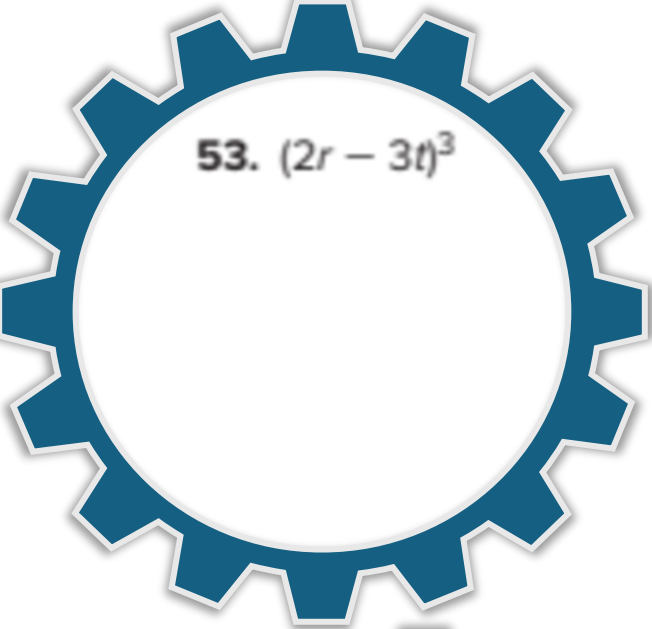
50. $(a - 2b)^2$



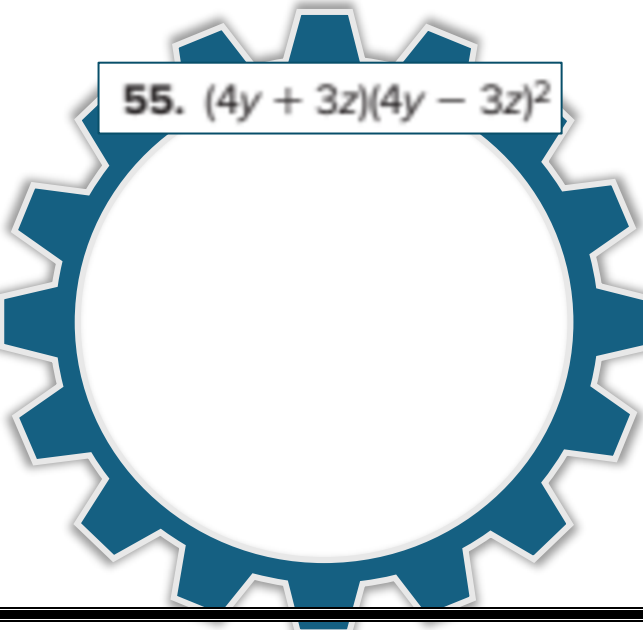
51. $(3c + 4d)^2$



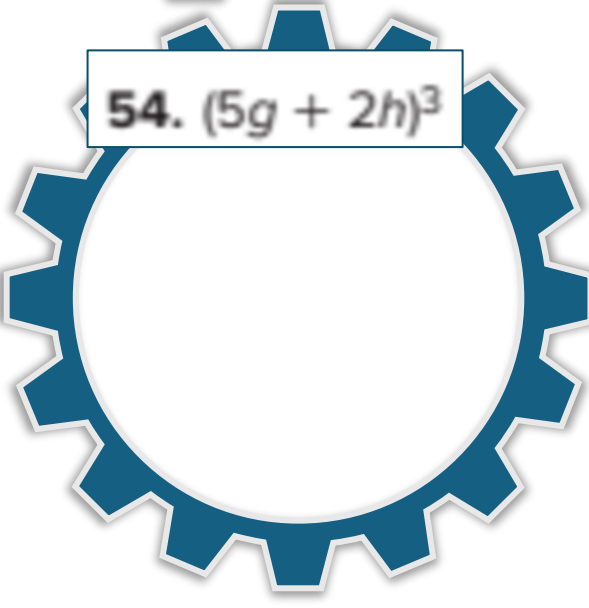
52. $(x - 5y)^2$



53. $(2r - 3t)^3$



55. $(4y + 3z)(4y - 3z)^2$



54. $(5g + 2h)^3$

Model 11 Lesson 1: Adding & Subtracting Polynomials**MCQ - الأسئلة الموضوعية**

1	Add & Subtract Polynomials	Exercise (27-34) & (43-45)	Page 636
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Find each sum or difference.

27. $(3c^3 - c + 11) - (c^2 + 2c + 8)$

28. $(z^2 + z) + (z^2 - 11)$

29. $(2x - 2y + 1) - (3y + 4x)$

30. $(4a - 5b^2 + 3) + (6 - 2a + 3b^2)$

31. $(x^2y - 3x^2 + y) + (3y - 2x^2y)$

32. $(-8xy + 3x^2 - 5y) + (4x^2 - 2y + 6xy)$

43. $(4x + 2y - 6z) + (5y - 2z + 7x) + (-9z - 2x - 3y)$

44. $(5a^2 - 4) + (a^2 - 2a + 12) + (4a^2 - 6a + 8)$

45. $(3c^2 - 7) + (4c + 7) - (c^2 + 5c - 8)$

Model 4 Lesson 1: Geometric Mean

MCQ - الأسئلة الموضوعية

15	Solve problems involving relationships between parts of a right triangle and the altitude to its hypotenuse.	Exercise (1-6)	Page 165
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Example 1: Find a Geometric Mean

Find the geometric mean between 5 and 45.

$$x = \sqrt{ab} \rightarrow \text{Definition of geometric mean}$$

$$= \sqrt{5 \times 45} \rightarrow a = 5 \text{ and } b = 45$$

$$= 15 \rightarrow \text{Simplify.}$$

The geometric mean between 5 and 45 is 15.

➤ Find the geometric mean between each pair of numbers.

1) 4 and 6	2) $\frac{1}{2}$ and 2	3) 4 and 25
4) 12 and 20	5) 17 and 3	6) 3 and 24

Model 4 Lesson 2: Pythagorean Theorem and Its Converse

MCQ - الأسئلة الموضوعية

16	Use the Converse of the Pythagorean Theorem.	Exercise (1-12)	Page 171
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Example 1 Find Missing Measures by Using the Pythagorean Theorem

❖ Find the value of x .

The side opposite the right angle is the **hypotenuse**, so $c = x$.

$$a^2 + b^2 = c^2 \quad \text{Pythagorean Theorem}$$

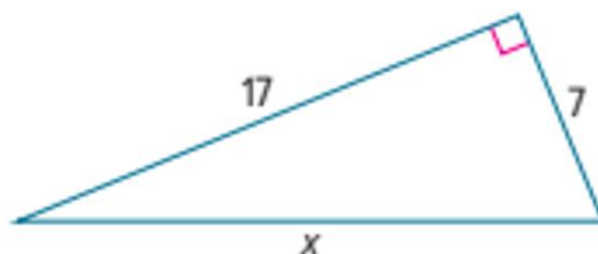
$$17^2 + 7^2 = x^2 \quad a = 17, b = 7, \text{ and } c = x$$

$$289 + 49 = x^2 \quad \text{Simplify.}$$

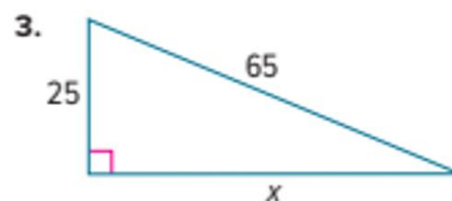
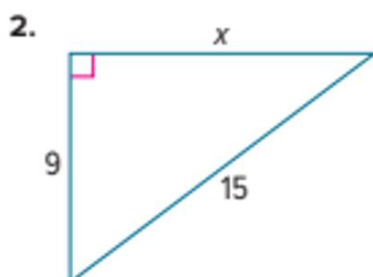
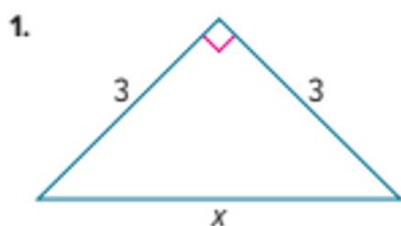
$$338 = x^2 \quad \text{Add.}$$

$$\sqrt{338} = x \quad \text{Take the positive square root of each side.}$$

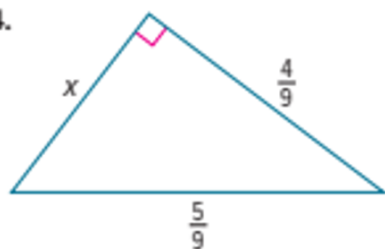
$$13\sqrt{2} = x \quad \text{Simplify.}$$



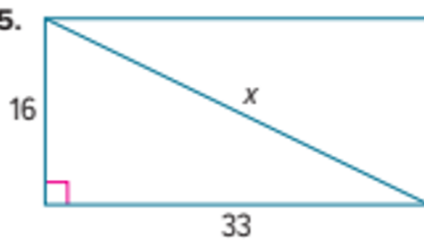
❖ Find the value of x .



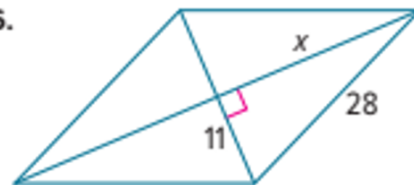
4.



5.

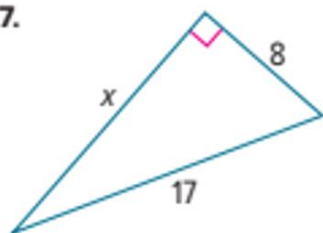


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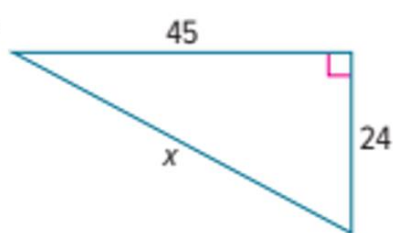


Use a **Pythagorean Triple** to find the value of x

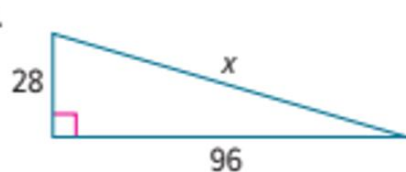
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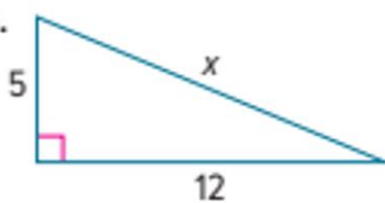
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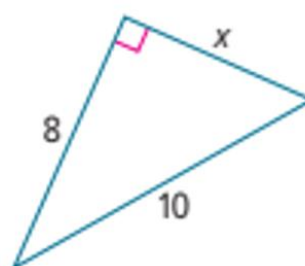
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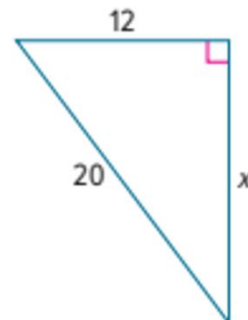
10.



11.



12.



Model 4 Lesson 3: Coordinates in Space.

MCQ - الأسئلة الموضوعية

17	Find the distance between two points on the coordinate plane.	Exercise (7-10 & 19-24)	Page 177-178
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Distance Formula in Space

$$D = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2 + (z_2 - z_1)^2}$$

❖ Determine the distance between each pair of points.

7. F(0, 0, 0) and G(2, 4, 3)	8. X(-2, 5, -1) and Y(9, 0, 4)
9. A(4, -6, 0) and B(1, 0, 1)	10. C(8, 7, -2) and D(0, 0, 0)

REGULARITY Determine the distance between each pair of points. Then determine the coordinates of the **midpoint M** of the segment joining the pair of points.

19) $P(-5, -2, -1)$ and $Q(-1, 0, 3)$	
Distance	Midpoint M
	$M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}, \frac{z_1 + z_2}{2} \right)$

20) $J(1, 1, 1)$ and $K(-1, -1, -1)$

Distance

Midpoint M

$$M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}, \frac{z_1 + z_2}{2} \right)$$

21) $J\left(\frac{3}{5}, 0, \frac{4}{5}\right)$ and $K(0, 3, 0)$

Distance

Midpoint M

$$M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}, \frac{z_1 + z_2}{2} \right)$$

22) $G(1, -1, 6)$ and $H\left(\frac{1}{5}, -\frac{2}{5}, 2\right)$

Distance

Midpoint M

$$M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}, \frac{z_1 + z_2}{2} \right)$$

23) $B(\sqrt{3}, 2, 2\sqrt{2})$ and $C(-2\sqrt{3}, 4, 4\sqrt{2})$

Distance

Midpoint M

$$M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}, \frac{z_1 + z_2}{2} \right)$$

24) $S(6\sqrt{3}, 4, 4\sqrt{2})$ and $T(4\sqrt{3}, 5, \sqrt{2})$

Distance

Midpoint M

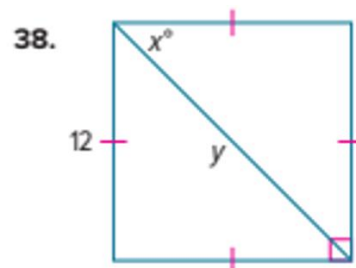
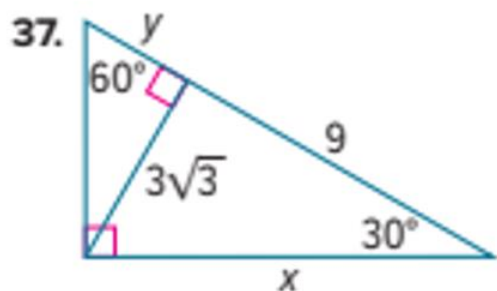
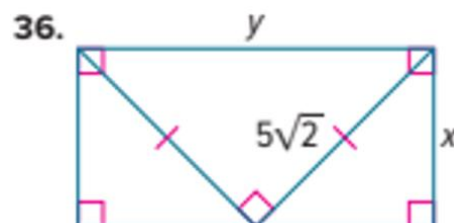
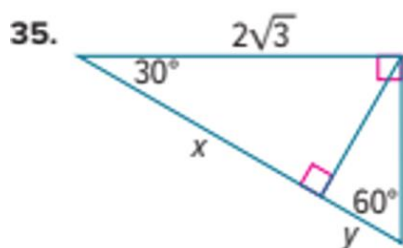
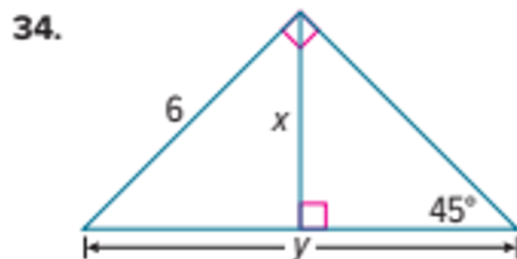
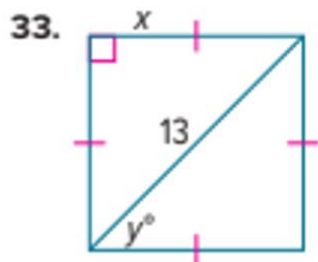
$$M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}, \frac{z_1 + z_2}{2} \right)$$

Model 4 Lesson 4: Special Right Triangles

MCQ - الأسئلة الموضوعية

18	Use the properties of 30° , 60° , 90° triangles.	Exercise (33-38)	Page 185
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Find the value of x and y .



Model 4 Lesson 6: Applying Trigonometry

MCQ - الأسئلة الموضوعية

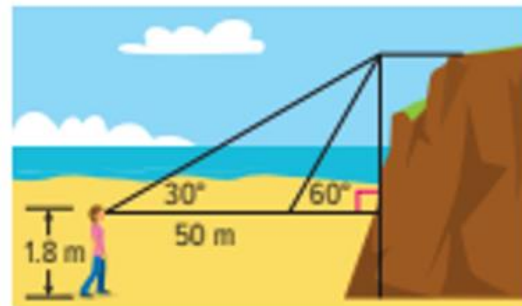
19	Use trigonometric ratios to find side lengths and angle measures of right triangles.	Exercise (9-12&23-26)	Page 200-202
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9. GARAGE To estimate the height of a garage, Carlos sights the top of the garage at a 42° angle of elevation. He then steps back 20 feet and sights the top of the garage at a 10° angle. If Carlos is 6 feet tall, how tall is the garage to the nearest foot?

مرآب لتقدير ارتفاع مرآب، رصد كارلوس قمة المرآب بزاوية ارتفاع قدرها 42° . ثم تراجع 20 قدمًا ورصد قمة المرآب بزاوية قدرها 10° إذا كان طول كارلوس 6 أقدام، فما هو ارتفاع المرآب لأقرب قدم

10. CLIFF Sarah stands on the ground and sights the top of a steep cliff at a 60° angle of elevation. She then steps back 50 meters and sights the top of the cliff at a 30° angle. If Sarah is 1.8 meters tall, how tall is the cliff to the nearest meter?

جرف صخري تقف سارة على الأرض وترصد قمة جرف صخري حاد بزاوية ارتفاع قدرها 60° . ثم تتراجع 50 مترًا وترصد قمة الجرف بزاوية قدرها 30° إذا كان طول سارة 1.8 متر، فما هو ارتفاع الجرف لأقرب متر؟

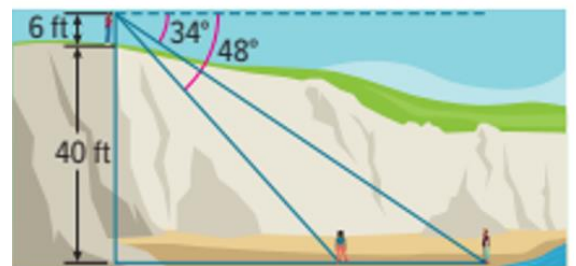


11. BALLOON The angle of depression from a hot air balloon to a person on the ground is 36° . When the person steps back 10 feet, the new angle of depression is 25° . If the person is 6 feet tall, how far above the ground is the hot air balloon to the nearest foot?

منطاد زاوية الانخفاض من منطاد هواء ساخن إلى شخص يقف على الأرض هي 36° . عندما يتراجع الشخص 10 أقدام، تصبح زاوية الانخفاض الجديدة 25° إذا كان طول الشخص 6 أقدام، فما هو ارتفاع منطاد الهواء الساخن عن الأرض لأقرب قدم؟

12. INDIRECT MEASUREMENT Mr. Dominguez is standing on a 40-foot ocean bluff near his home. He can see his two friends on the beach below. If his line of sight is 6 feet above the ground and the angles of depression to his friends are 34° and 25° , how far apart are his friends to the nearest foot?

القياس غير المباشر يقف السيد دومينغيز على جرف محيطي ارتفاعه 40 قدمًا بالقرب من منزله. يمكنه رؤية صديقيه على الشاطئ أدناه. إذا كان خط بصره يرتفع 6 أقدام فوق سطح الأرض وكانت زاويتا الانخفاض إلى صديقيه هما 34° و 25° ، فما هي المسافة الفاصلة بين صديقيه لأقرب قدم؟



23. USE ESTIMATION A hiker dropped his backpack over one side of a canyon onto a ledge below. Because of the shape of the cliff, he could not see exactly where it landed. A park ranger is located on the other side of the canyon, at the same height, 113 feet away from the hiker. The ranger sights the backpack at an **angle of depression of 32°** .

a. Explain how you can use angles of elevation and depression to estimate the distance that the backpack fell.

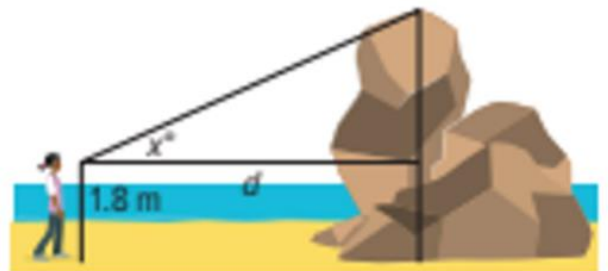
b. About how far down did the backpack fall to the nearest foot?

استخدم التقدير أسقط متنزه حقيبته على أحد جانبي واد عميق (كانيون) على حافة صخرية في الأسفل. وبسبب شكل الجرف، لم يستطع رؤية مكان هبوطها بالضبط. يتركز حارس الغابة على الجانب الآخر من الوادي، وعلى نفس الارتفاع، ويبعد 113 قدمًا عن المتنزه. رصد الحارس الحقيبة بزاوية انخفاض قدرها 32° .

أ. اشرح كيف يمكنك استخدام زوايا الارتفاع والانخفاض لتقدير المسافة التي سقطتها الحقيبة.
ب. ما هو تقريباً الارتفاع الذي سقطته الحقيبة لأقرب قدم؟

26. REGULARITY A geologist wants to determine the height of a rock formation. She stands **d meters** from the formation and sights the top of the formation at an **angle of x°** , as shown. The geologist's height is **1.8 m**. Write a general formula that the geologist can use to find the height **h** of the rock formation if she knows the values of **d** and **x**.

انتظام تريد عالمة جيولوجيا تحديد ارتفاع تكوين صخري. تقف على بُعد **d متر** من التكوين وترصد قمة التكوين بزاوية قدرها x° ، كما هو موضح. يبلغ ارتفاع عالمة الجيولوجيا **1.8 متر** اكتب صيغة عامة يمكن لعالمة الجيولوجيا استخدامها لإيجاد الارتفاع **h** للتكوين الصخري إذا كانت تعرف قيم **x** و **d**

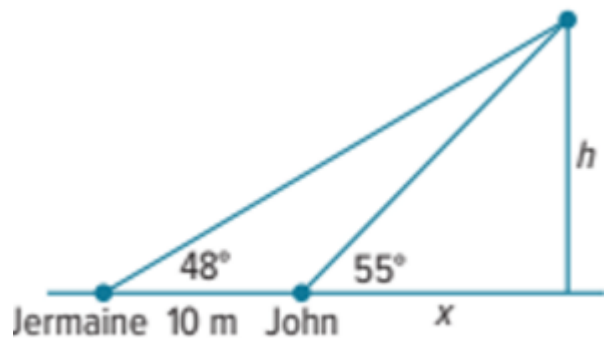


24. USE A MODEL Jermaine and John are standing 10 meters apart, watching a helicopter hover above the ground.

a. Find two different expressions that can be used to find h , the height of the helicopter.

b. Equate the two expressions you found for part a to solve for x . Round your answer to the nearest hundredth.

c. How high above the ground is the helicopter? Round your answer to the nearest hundredth.



استخدم نموذجًا يقف جيرماين وجون على بُعد 10 أمتار من بعضهما البعض يشاهدان مروحية تحوم فوق الأرض.

أ. أوجد تعبيرين مختلفين يمكن استخدامهما لإيجاد h ، وهو ارتفاع المروحية.
ب. ساو بين التعبيرين اللذين وجدتهما في الجزء أ لحل قيمة x . قَرِّب إجابتك إلى أقرب جزء من مائة.

ج. ما هو ارتفاع المروحية فوق الأرض؟ قَرِّب إجابتك إلى أقرب جزء من مائة.

25. USE A SOURCE Go online to research the **Sandia Peak Tramway in New Mexico**. If you were to stand at the top terminal of Sandia Peak Tramway and look at the base of the second tower along the tramway route, what would be the angle of depression for your line of sight? Round your answer to the nearest tenth of a degree.

استخدم مصدرًا ابحث عبر الإنترنت عن تلفريك سانديا بيك (Sandia Peak Tramway) في نيو مكسيكو. إذا وقفت عند المحطة العلوية لتلفريك سانديا بيك ونظرت إلى قاعدة البرج الثاني على طول مسار التلفريك، فما هي زاوية الانخفاض لخط رؤيتك؟ قَرِّب إجابتك إلى أقرب عُشر من الدرجة.

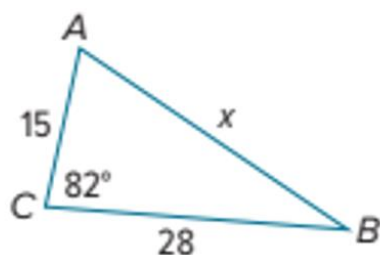
Model 4 Lesson 8: The Law of Cosines

MCQ - الأسئلة الموضوعية

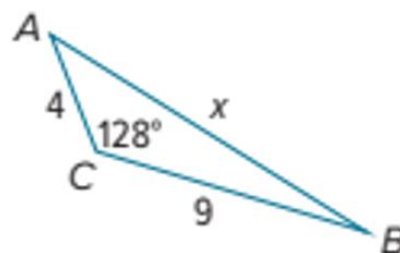
20	Use the Law of Cosines to solve triangles.	Exercise (1-6 & 9-14)	Page 215
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Find the value of x to the nearest tenth for side lengths and nearest degree for angle measures.

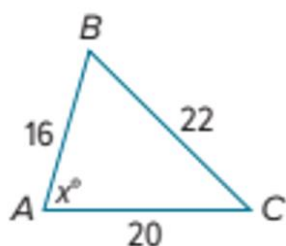
1.



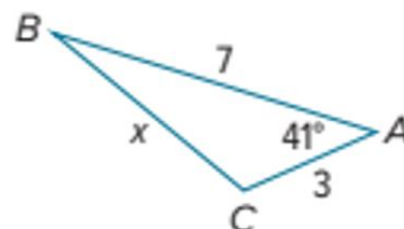
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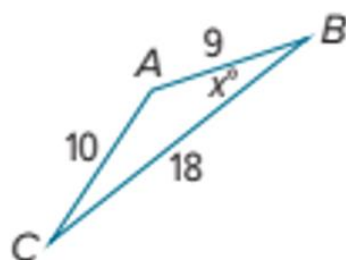
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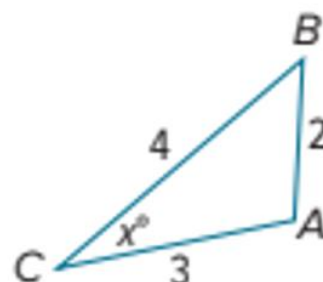
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5.

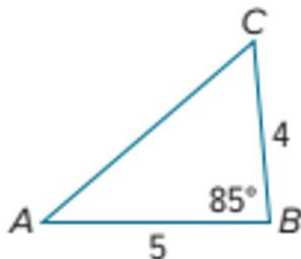


6.

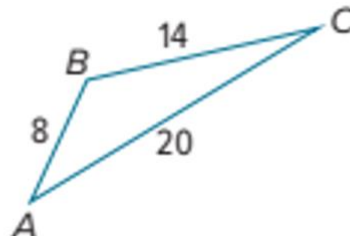


REASONING Solve each triangle. Round side lengths to the nearest tenth and angle measures to the nearest degree.

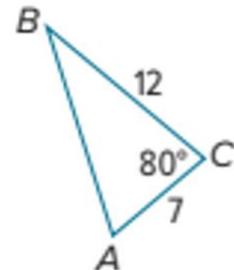
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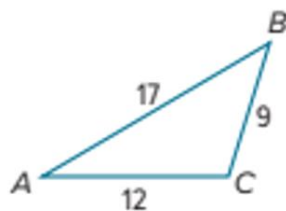
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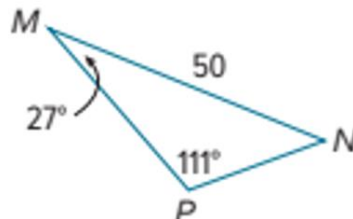
11.



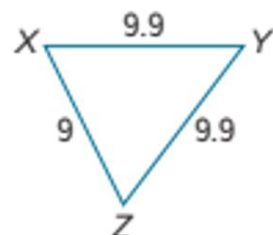
12.



13.



14.



Model 4 lesson 5: Trigonometry

الأسئلة المقالية - FRQ

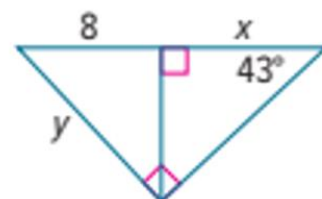
24	Use trigonometric ratios to find side lengths and angle measures of right triangles.	Exercise (36-44)	Page 194
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❖ Find the values of x and y . Round to the nearest tenth.

36.



37.



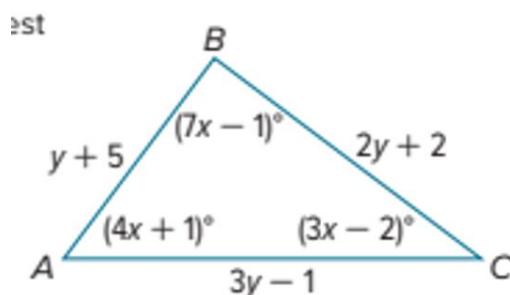
38. STRUCTURE Explain how you can use only the table at the right to find the value of $\cos 20^\circ$.

$m\angle A$	$\sin A$
65°	0.9063
70°	0.9397
75°	0.9659
80°	0.9848
85°	0.9962

39. FIND THE ERROR Lakasha and Treyvon were both solving the same trigonometry problem. However, after they finished their computations, Lakasha said the answer was $52 \sin 27^\circ$ and Treyvon said the answer was $52 \cos 63^\circ$. Could they both be correct? Explain your reasoning.

اكتشف الخطأ كان كل من لأكاشا وتريفون يحلان نفس المسألة المثلثية. ومع ذلك، بعد الانتهاء من حساباتهما، قالت لأكاشا أن الإجابة هي $52 \sin 27^\circ$ بينما قال تريفون أن لإجابة هي $52 \cos 63^\circ$. هل يمكن أن يكون كلاهما صحيحًا؟ اشرح سبب استنتاجك.

40. PERSEVERE Solve $\triangle ABC$. Round each measure to the nearest whole number.

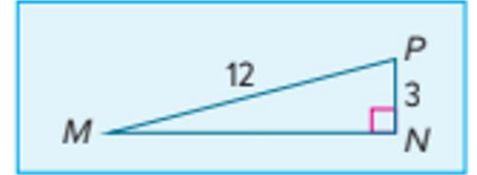
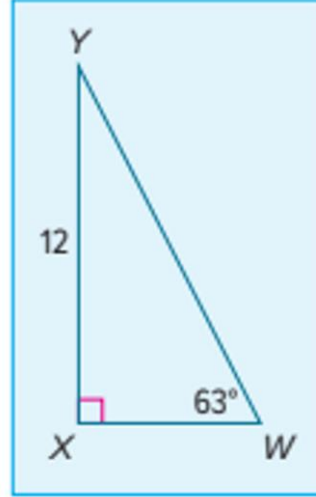
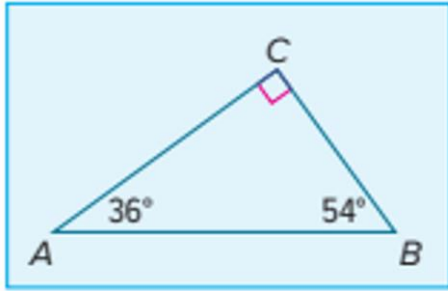


41. ANALYZE Are the values of sine and cosine for an acute angle of a right triangle always less than 1? Explain.

تحليل هل قيمتا (sine) و (cosine) لزاوية حادة في مثلث قائم الزاوية أقل دائماً من 1؟ اشرح.

42. WHICH ONE DOESN'T BELONG? If the directions say to **Solve the right triangle**, then which of the triangles shown does not belong? Justify your conclusion.

42. أيها لا ينتمي؟ إذا كانت التعليمات تقول حل المثلث القائم الزاوية، فأَي من المثلثات المعروضة لا ينتمي؟ برر استنتاجك



43. WRITE Explain how you can use ratios of the side lengths to find the angle measures of the acute angles in a right triangle.

اكتب اشرح كيف يمكنك استخدام نسب أطوال الأضلاع لإيجاد قياسات الزوايا الحادة في مثلث قائم الزاوية

44. CREATE Draw a right triangle with a tangent ratio of $\frac{3}{2}$ for one of the acute angles. Then find the measure of the other acute angle to the nearest tenth of a degree.

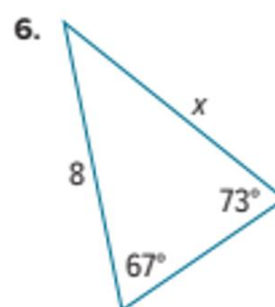
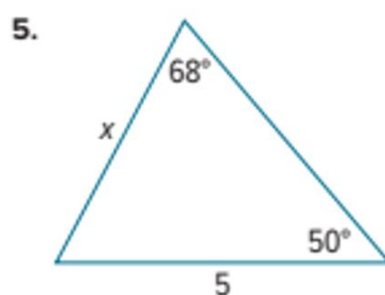
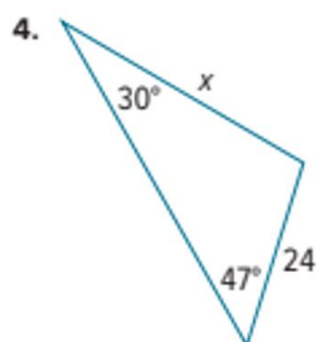
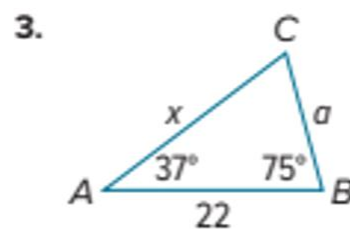
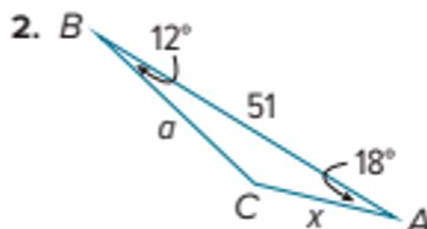
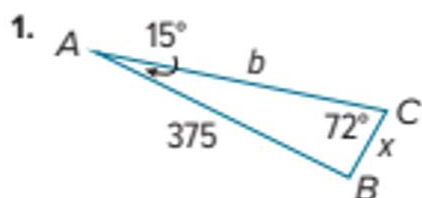
إنشاء ارسم مثلثًا قائم الزاوية تكون فيه نسبة الظل هي $\frac{3}{2}$ لإحدى الزوايا الحادة . ثم أوجد قياس الزاوية الحادة الأخرى وقربه إلى أقرب عُشر من الدرجة.

Model 4 lesson 7: The Law of Sines

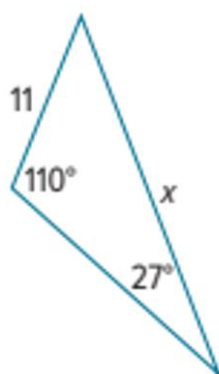
FRQ - الأسئلة المقالية

25	Use the Law of Sines to solve triangles.	Exercise (1-12)	Page 207
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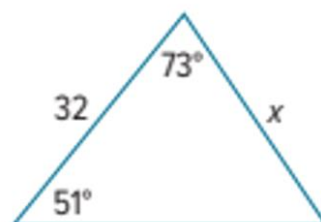
❖ Find the value of x to the nearest tenth.



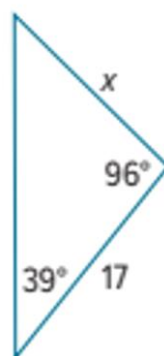
7.



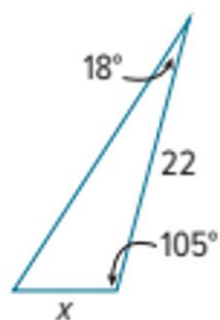
8.



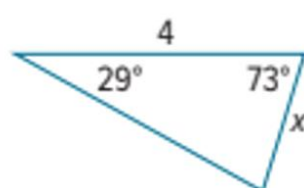
9.



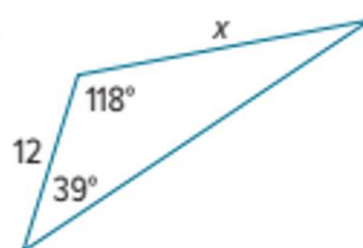
10.



11.



12.



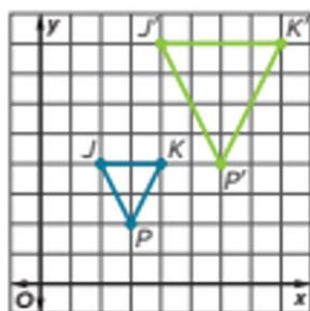
Model 3 Lesson 1: Dilations

MCQ - الأسئلة الموضوعية

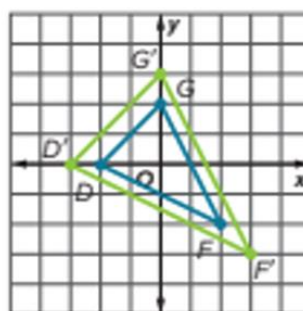
9	Find the scale factor of a dilation.	Exercise (10-12 & 17-18)	Page 120
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Find the scale factor of the dilation.

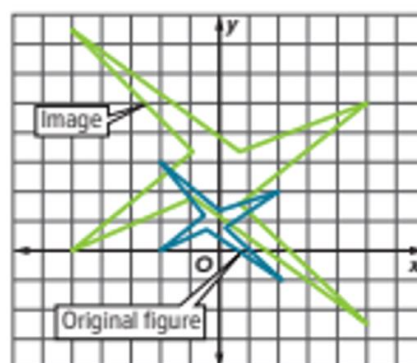
10. $\triangle J'K'P'$ is the image of $\triangle JKP$.



11. $\triangle D'F'G'$ is the image of $\triangle DFG$.

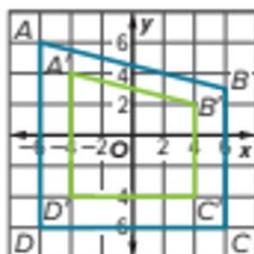


12. Tyrone drew a logo and a dilation of the same logo on the coordinate plane. What is the scale factor of the dilation?

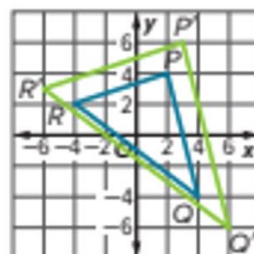


Find the scale factor of the dilation.

17. $A'B'C'D'$ is the image of $ABCD$.



18. $\triangle P'Q'R'$ is the image of $\triangle PQR$.



Model 3 Lesson 2: Similar Polygons

MCQ - الأسئلة الموضوعية

10	Solve problems using the properties of similar polygons.	Exercise (11-14 & 19-20)	Page 128-129
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Each pair of polygons is similar. Find the value of x .

11.

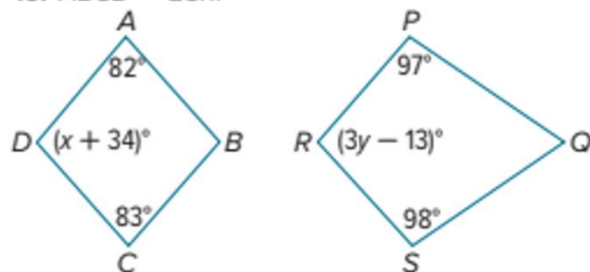
12.

13.

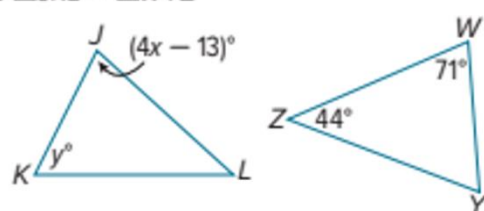
14.

Find the value of x and y for each pair of polygons.

19. $ABCD \sim QSRP$



20. $\triangle JKL \sim \triangle WYZ$

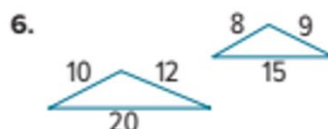
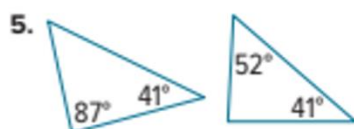
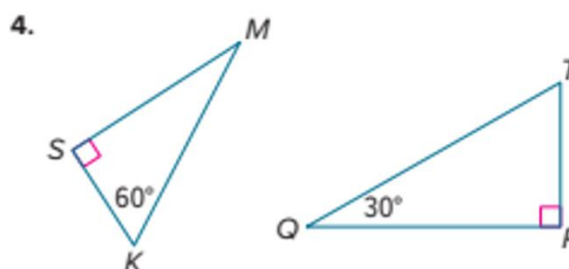
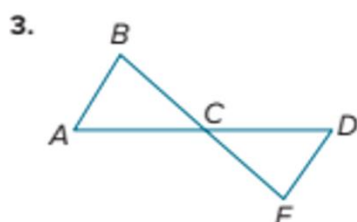
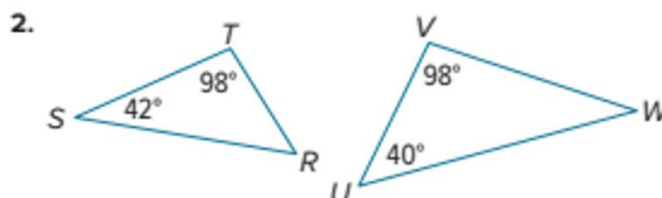
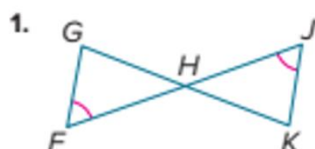


Model 3 Lesson 3: Similar Triangles: AA Similarity

MCQ - الأسئلة الموضوعية

11	Identify similar triangles using the AA Similarity Postulate and the SSS and SAS Similarity Theorems.	Exercise (1-6 & 1- 4)	Page 133-139
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Determine whether each pair of triangles is similar. Explain your reasoning.

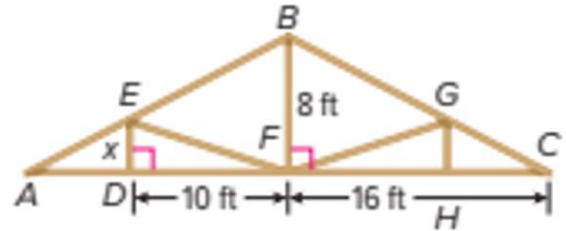


Model 3 Lesson 4: Use similar triangles to solve problems

MCQ - الأسئلة الموضوعية

12	Use similar triangles to solve problems.	Exercise (9-12)	Page 139-140
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9. **ROOFING** The skeleton of a roof is shown. Find the value of x such that triangles DEF and FBC in the outline of the roof are similar.



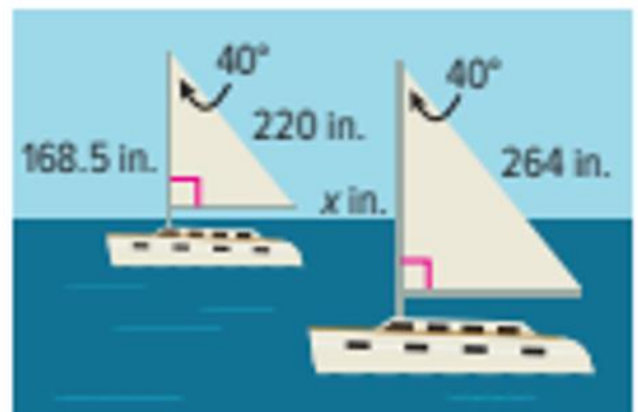
10. **RADIO** A radio tower casts an 8-foot-long shadow at the same time that a vertical **yardstick** casts a shadow one-half inch long. If the triangles formed by the objects and their shadows are similar, how tall is the radio tower?

راديو يلقي برج راديو ظلًا بطول 8 أقدام في نفس الوقت الذي تلقي فيه عصا قياس عمودية (yardstick) ظلًا بطول نصف بوصة. إذا كانت المثلثات التي تكونت من الأجسام وظلالها متشابهة، فما هو ارتفاع برج الراديو؟

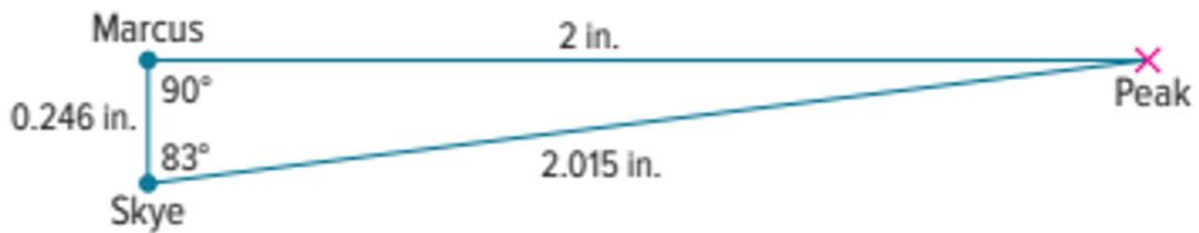
11. **SAILING** The two sailboats shown are participating in a regatta.

If the sails are **similar**, what is the value of x ?

إبحار يشارك القاربان الشراعيان الموضحان في سباق قوارب (ريغاتا). إذا كانت الأشرعة متشابهة، فما هي قيمة x ؟



12. MOUNTAIN PEAKS Marcus and Skye want to estimate how far a mountain peak is from their houses. After taking some measurements, they construct a diagram.



The actual distance between Marcus and Skye's houses is $1\frac{1}{2}$ miles.

a. What is the actual distance from Marcus's house to the peak of the mountain? Round your answer to the nearest tenth of a mile.

b. What is the actual distance from Skye's house to the peak of the mountain? Round your answer to the nearest tenth of a mile.

Model 3 Lesson 5: Triangle Proportionality

MCQ - الأسئلة الموضوعية

13	Use proportional parts with parallel lines.	Exercise (1-4)	Page 145
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Example 1 Use Triangle Proportions to Find the Length of a Side

In $\triangle BCD$, $\overline{PQ} \parallel \overline{CD}$. If $QD = 14.5$, $BP = 9$, and $PC = 15$, find BQ .

$$\frac{BP}{PC} = \frac{BQ}{QD}$$

Triangle Proportionality Theorem

$$\frac{9}{15} = \frac{BQ}{14.5}$$

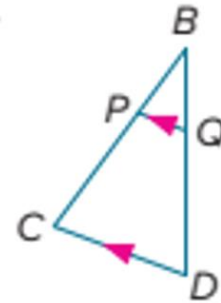
Substitution

$$15BQ = 130.5$$

Multiplication Property of Equality

$$BQ = 8.7$$

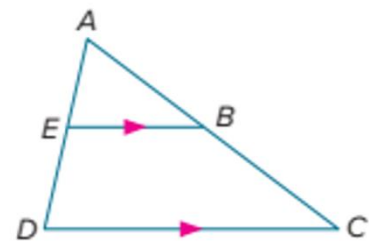
Solve.



Use the figure at the right.

1. If $AB = 6$, $BC = 4$, and $AE = 9$, find ED .

2. If $AB = 12$, $AC = 16$, and $ED = 5$, find AE



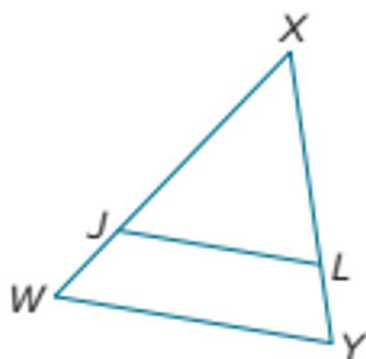
Example 2 Use Triangle Proportions to Determine if Lines are Parallel

In $\triangle WXY$, $YL = 5$, $LX = 20$, and $\overline{JX}$ is four times as long as $\overline{WJ}$. Is $\overline{JL} \parallel \overline{WY}$? Explain your reasoning.

To show that $\overline{JL} \parallel \overline{WY}$, we must show that $\frac{WJ}{JX} = \frac{YL}{LX}$ using the Converse of the Triangle Proportionality Theorem. Find and simplify each ratio. Because $\overline{JX}$ is four times as long as $\overline{WJ}$, you can represent their lengths with x and $4x$, respectively.

$$\frac{WJ}{JX} = \frac{x}{4x} \text{ or } \frac{1}{4} \qquad \frac{YL}{LX} = \frac{5}{20} \text{ or } \frac{1}{4}$$

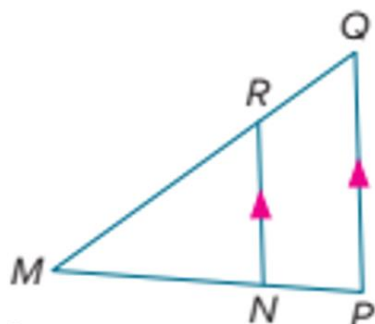
Because $\frac{1}{4} = \frac{1}{4}$, the sides are proportional. Therefore, $\overline{JL} \parallel \overline{WY}$.



Determine whether $\overline{NR} \parallel \overline{PQ}$. Justify your answer.

3. $PM = 18$, $PN = 6$, $QM = 24$, and $RM = 16$

4. $QM = 31$, $RM = 21$, and $PM = 4PN$



Model 3 Lesson 6: Parts of Similar Triangles

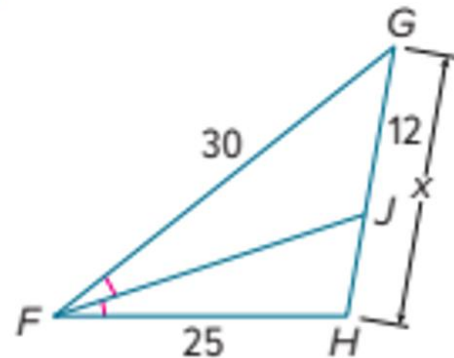
MCQ - الأسئلة الموضوعية

14	Recognize and use proportional relationships of corresponding angle bisectors, altitudes, and medians of similar triangles.	Example 3 & Exercise (8 - 9)	Page 152-153
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Example 3 Use the Triangle Angle Bisector Theorem

Find the value of x .

Because $\overline{FJ}$ is an angle bisector of $\triangle FGH$, you can use the Triangle Angle Bisector Theorem to write a proportion.



$$\frac{GJ}{JH} = \frac{FG}{FH}$$

Triangle Angle Bisector Theorem

$$\frac{12}{x - 12} = \frac{30}{25}$$

Substitution

$$12 \cdot 25 = 30(x - 12)$$

Multiplication Property of Equality

$$300 = 30x - 360$$

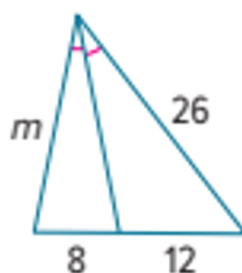
Simplify.

$$22 = x$$

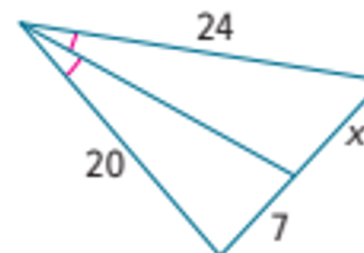
Solve.

Find the value of each variable to the nearest tenth.

8.



9.



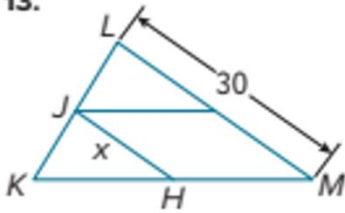
Model 3 Lesson 5: Parts of Similar Triangles

MCQ - الأسئلة الموضوعية

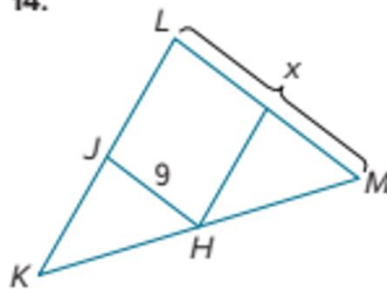
23	Solve problems and prove theorems by using the Triangle Midsegment Theorem and its corollaries.	Exercise (13-15& 24-25)	Page 146-148
	Solve problems and prove theorems by using the Triangle proportionality.	Exercise (11-12& 21-22)	Page 146-147

$\overline{JH}$ is a midsegment of $\triangle KLM$. Find the value of x .

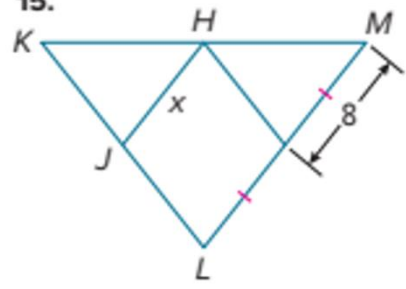
13.



14.

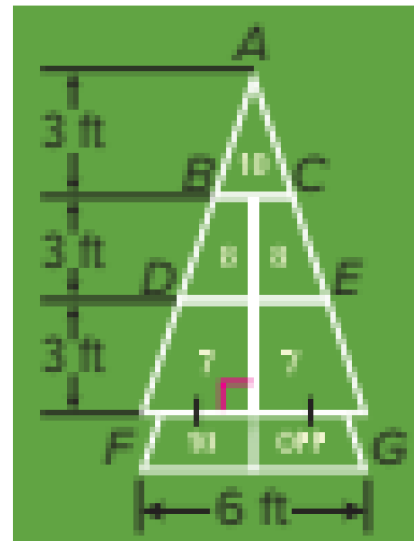


15.



24. SHUFFLEBOARD A crew is laying out a shuffleboard court using the plan shown at the right. Explain how they can find the lengths of $\overline{AB}$, $\overline{BD}$, and $\overline{DF}$ to the nearest tenth of a foot.

لعبة شَفْلِبورد (Shuffleboard) تقوم مجموعة من العمال بتخطيط ملعب لعبة الشفلبورد باستخدام المخطط الموضح على اليمين. اشرح كيف يمكنهم إيجاد أطوال القطع المستقيمة $\overline{AB}$, $\overline{BD}$, و $\overline{DF}$ وتقريبها إلى أقرب عُشر من القدم



25. In $\triangle PQR$, the length of $\overline{PQ}$ is 16 units. A series of midsegments are drawn such that $\overline{ST}$ is the midsegment of $\triangle PQR$, $\overline{UV}$ is the midsegment of $\triangle STR$, and $\overline{WX}$ is the midsegment of $\triangle UVR$.

a. What is the length of each midsegment?

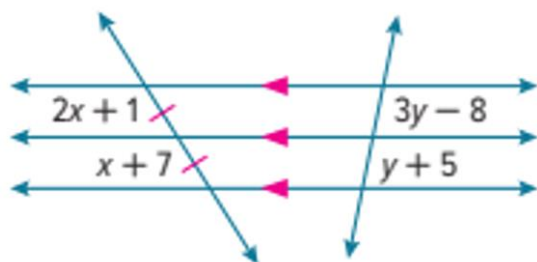
$$ST = \quad \quad \quad UV = \quad \quad \quad WX =$$

b. What would be the measure of midsegment $\overline{YZ}$ of $\triangle WXR$?

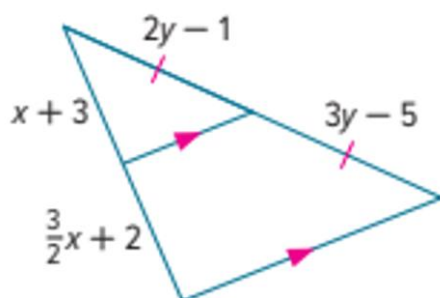


Find the values of x and y .

11.



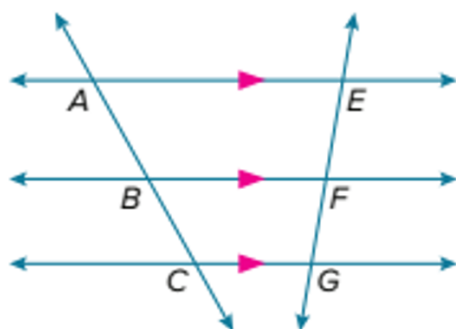
12.



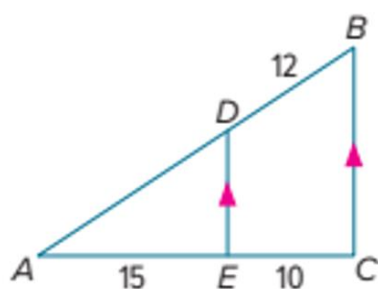
21. **PROOF** Write a paragraph proof of Corollary 8.1.

Given: $\overleftrightarrow{AE} \parallel \overleftrightarrow{BF} \parallel \overleftrightarrow{CG}$

Prove: $\frac{AB}{BC} = \frac{EF}{FG}$



22. **REGULARITY** In the figure, $\overline{DE} \parallel \overline{BC}$, $BD = 12$, $EC = 10$, and $AE = 15$. Explain how to find the length of $\overline{AD}$.



Model 2 Lesson 1: Angles of Polygons

MCQ - الأسئلة الموضوعية

5	Find and use the sum of the measures of the interior angles of a polygon.	Example 1 & Exercise (1 - 4)	Page 59-63
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Example 1 Find the Interior Angles Sum of a Polygon

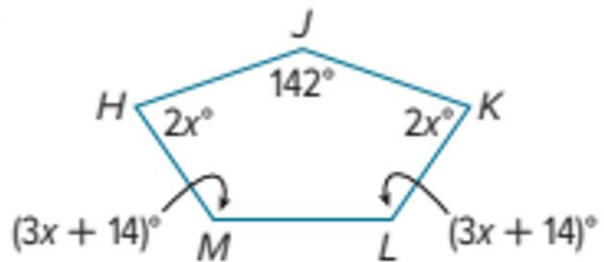
Find the measure of each interior angle of pentagon $HJKLM$.

Step 1 Find the sum.

A pentagon has 5 sides. Use the Polygon Interior Angles Sum Theorem to find the sum of its interior angle measures.

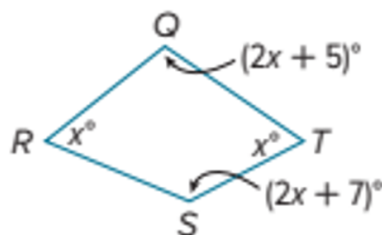
$$\begin{aligned}
 &m\angle H + m\angle J + m\angle K + m\angle L + m\angle M \\
 &= (n - 2) \cdot 180^\circ \\
 &= (5 - 2) \cdot 180^\circ \\
 &= 540^\circ
 \end{aligned}$$

Polygon Interior Angles Sum Thm
Substitute.
Solve.

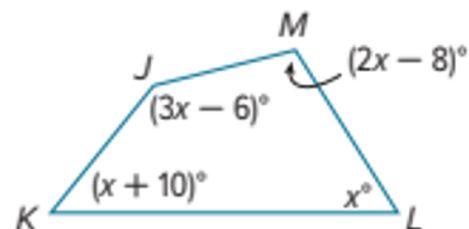


Find the measure of each interior angle.

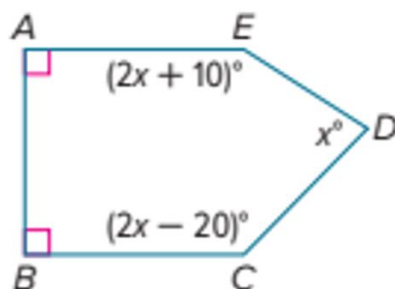
1.



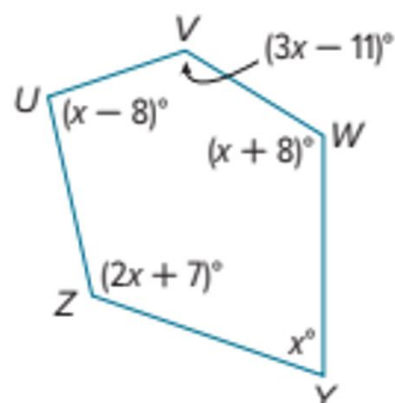
2.



3.



4.

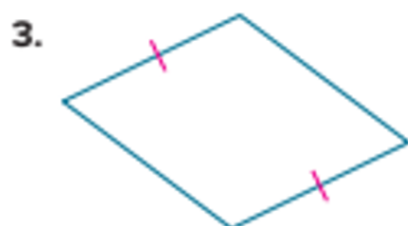


Model 2 Lesson 3: Tests for Parallelograms

MCQ - الأسئلة الموضوعية

6	Recognize the conditions that ensure a quadrilateral is a parallelogram.	Exercise (1 - 6)	Page79
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Determine whether each quadrilateral is a parallelogram. Justify your answer.



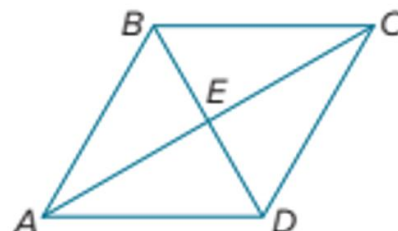
Model 2 Lesson 5: Rhombi and Squares

MCQ - الأسئلة الموضوعية

7	Recognize and apply properties of rhombi and squares.	Exercise (1 - 8)	Page (95, 97)
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Quadrilateral $ABCD$ is a rhombus. Find each value or measure.

1. If $m\angle ABD = 60^\circ$, find $m\angle BDC$.
2. If $AE = 8$, find AC .
3. If $AB = 26$ and $BD = 20$, find AE .
4. Find $m\angle CEB$.
5. If $m\angle CBD = 58^\circ$, find $m\angle ACB$.
6. If $AE = 3x - 1$ and $AC = 16$, find x .
7. If $m\angle CDB = 6y^\circ$ and $m\angle ACB = (2y + 10)^\circ$, find the value of y .
8. If $AD = 2x + 4$ and $CD = 4x - 4$, find the value of x .



Model 2 Lesson 6: Rhombi and Squares

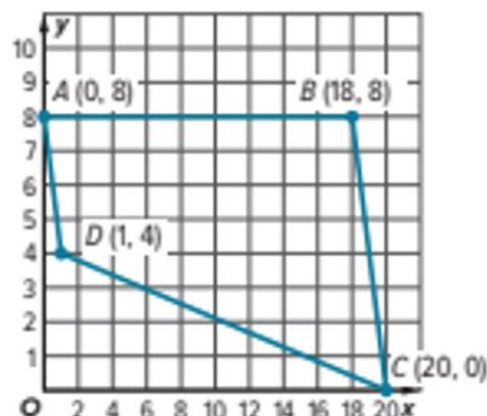
MCQ - الأسئلة الموضوعية

8	Recognize and apply the properties of trapezoids, including the medians of trapezoids.	Example 5 Exercise (11-12)	Page (102 - 106)
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Example 5 Midsegments and Coordinate Geometry

In trapezoid $ABCD$, $\overline{AD} \parallel \overline{BC}$. Find the endpoints of the midsegment.

You can use the Midpoint Formula to find the midpoints of $\overline{AB}$ and $\overline{DC}$. These midpoints are the endpoints of the midsegment of trapezoid $ABCD$.

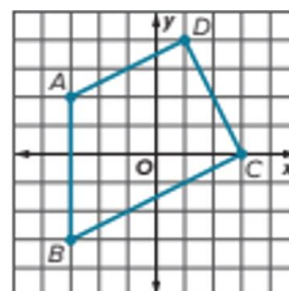


$$\text{midpoint of } \overline{AB} = \left(\frac{0 + 18}{2}, \frac{8 + 8}{2} \right) = (9, 8)$$

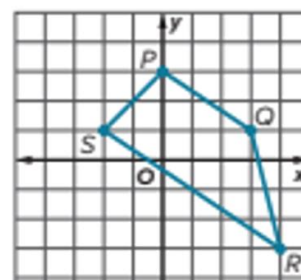
$$\text{midpoint of } \overline{DC} = \left(\frac{1 + 20}{2}, \frac{4 + 0}{2} \right) = (10.5, 2)$$

So, the endpoints of the midsegments are (9, 8) and (10.5, 2).

11. In trapezoid $ABCD$, $\overline{AD} \parallel \overline{BC}$. Find the endpoints of the midsegment.



12. In trapezoid $PQRS$, $\overline{PQ} \parallel \overline{SR}$. Find the endpoints of the midsegment.

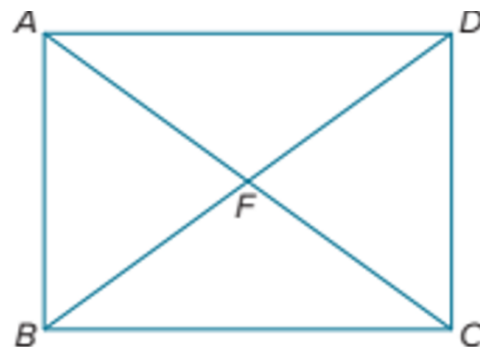


Model 2 Lesson 4: Rectangles

FRQ- الأسئلة المقالية

22	Recognize and apply properties of rectangles...	Exercise (9 -14)	Page 87
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9. Quadrilateral $ABCD$ is a rectangle. If $m\angle ADB = (4x + 8)^\circ$ and $m\angle DBA = (6x + 12)^\circ$, find the value of x .



Quadrilateral $EFGH$ is a rectangle. Use the given information to find each measure.

10. If $m\angle FEG = 57^\circ$, find $m\angle GEH$.

11. If $m\angle HGE = 13^\circ$, find $m\angle FGE$.

12. If $FK = 32$ feet, find EG .

13. Find $m\angle HEF + m\angle EFG$.

14. If $EF = 4x - 6$ and $HG = x + 3$, find EF .

