

Mid Term Study Guide

Math 2 Advanced

7.G.1.1/1.2/1.3/2.4/2.6

Scale Drawings

On a map the distance between two cities is 3 inches. The actual distance between the two cities 450 miles. What is the scale of the map?

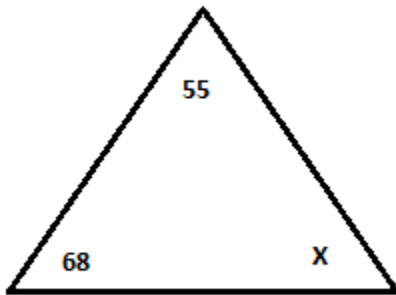
A car has a length of 12 feet. A model of the car was built with the scale of 2 in: 3 ft. What is the length of the model car?

Triangles

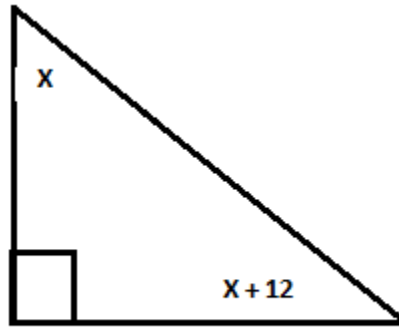
How many degrees are in a triangle? _____

Find the area of a triangle with a height of 6in and a base of 9in.

$$A = \frac{1}{2}bh$$



SOLVE FOR X



Solve for x then solve EACH angle's measure

Write the criterion for the length of a third side of a triangle with known sides of 5 and 10.

Circles

Find the area and circumference of a circle with a radius of 5cm. Use 3.14 for π .

$$A = \pi r^2$$

$$C = 2\pi r$$

Find the area and circumference of a circle with a diameter of 22 in. Use 3.14 for π .

$$A = \pi r^2$$

$$C = 2\pi r$$

Cross Sections

What shape is made when you cut a cross section parallel to the base of a triangular prism? _____ What shape is made if the cut was made perpendicular to the base? _____

A decagonal prism has _____ faces; _____ edges and _____ vertices

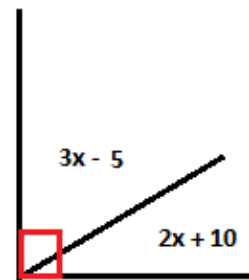
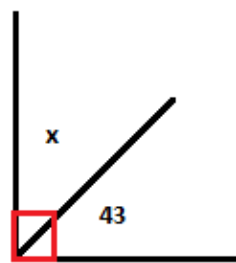
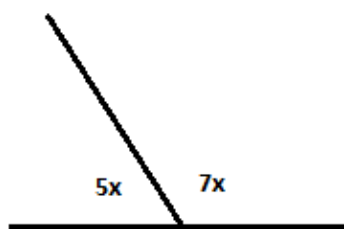
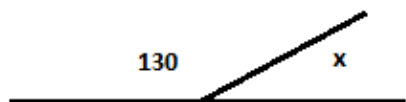
A octagonal pyramid has _____ faces; _____ edges and _____ vertices

Angles

Supplementary angles = _____ degrees

Complementary angles = _____ degrees

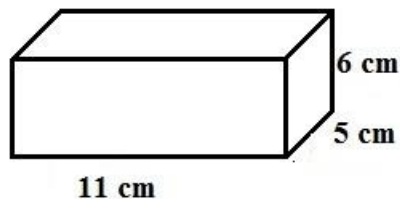
solve for x then solve for EACH angle's measure



Angle = 90 = _____ angle < 90 = _____ angle > 90 = _____

Rectangular Prisms

Find the volume and surface area of the following prism.



$$V = lwh$$

$$SA = 2lw + 2lh + 2wh$$

7.SP.3.5/3.6/3.7/3.8

Probability

In a random survey, 18 out of 25 students said that Christmas was their favorite holiday. What is the probability of choosing a student who did NOT choose Christmas? Express your answer as a percent.

The probability of selecting an ace out of a deck of cards is $\frac{4}{52}$. What is the probability of NOT selecting an ace? Express your answer as a fraction, decimal, and percent.

A football kicker made 8 out of his 12 attempts. About how many of the next 18 attempts would you expect him to make?

What is the difference between experimental and theoretical probability?

A number cube is rolled twice. Determine the probability of the following, and describe the likelihood of the event happening:

P (4, 2)

P(odd, even)

P(less than 5, greater than 2)

7.EE.2.3/2.4

Order of Operations

The Order of Operations is _____

Simplify: $(6 + 12 \div 3) - 2^3 \cdot 8$

$8 - 2 \cdot 2 + 6$

Simplifying Equations and Inequalities

Solve for x:

$$x + 12 = 4$$

$$3x + 5 = -4$$

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

Simplify the following by combining like terms:

$$-3m + 7 - 2m - 5 + 6m$$

An equation can have: (circle all that apply) one solution multiple solutions no solution

Solve: $3a + 7 = 5a + 5$

$4a + 6 = 2(2a + 3)$

$\frac{2}{3}a + 6 = \frac{1}{2}a + 8$

When does the sign flip on an inequality? _____

Solve **and** graph $60 \leq 5(-4x + 4)$

8.EE.1.1/1.2/1.3/1.4**Working with Exponents**

Write an expression equivalent to each of the following:

3^{-3}

$4^3 \cdot 4^{-5}$

$\frac{12^6}{12^3}$

$(8^3)^4$

What is the value of $(-5)^2$? _____ Does $(-5)^2$ have the same value as -5^2 ? _____

Explain your answer. _____

Write **34,500,000,000,000** in scientific notation _____Write 1.2×10^8 into standard notation _____Write 1.2×10^{-8} into standard notation _____Why is **45×10^6** not in correct scientific notation? _____

Fix it! _____

Why is **0.0098×10^6** not in correct scientific notation? _____

Fix it! _____

Solve in correct scientific notation: $(3.4 \times 10^8)(2 \times 10^3) =$ _____Solve in correct scientific notation: $\frac{(3.4 \times 10^8)}{(2 \times 10^3)} =$ _____**Square Roots**

A square garden has an area of 67 sq. ft. What is the length of the side of the garden? Round your answer to the nearest tenth.

The $\sqrt{57}$ falls between which two consecutive whole numbers? _____ and _____

The $\sqrt{200}$ fall between which two consecutive whole numbers? _____ and _____

What is the value of $\sqrt{3^5}$? Round to the nearest tenth. _____

Estimate the value of $\sqrt{55}$ to the nearest whole number and the nearest tenth.

_____, _____

8.G.2.6/2.7/2.8

Pythagorean Theorem

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

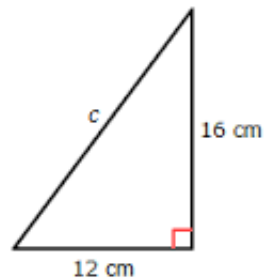
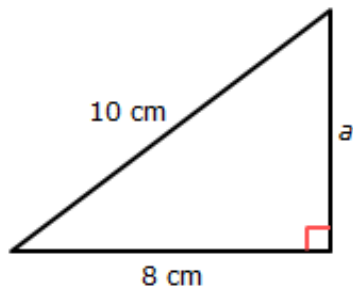
Circle the groups of numbers that could be the sides of a right triangle

5, 12, 13

$\sqrt{36}$, 7, 10

8, 15, 17

$\sqrt{49}$, 24, 25



What is the length of the missing leg?

What is the length of the hypotenuse?

If A=5; B = 8 and C = 12 - classify this as RIGHT ACUTE or OBTUSE

8.NS.1.1/1.2

Rational and Irrational Numbers

Is the $\sqrt{12}$ rational or irrational? _____ How do you know?

Is 0.12123123412345... rational or irrational? _____ How do you know?

Write $-\frac{1}{6}$ as a decimal. _____

Proportion:

1) $\frac{5}{8} = \frac{25}{x}$

2) proportional or not $\frac{15}{18.2} = \frac{20.8}{22.5}$

3) What is the **unit rate** if 18 bananas cost \$3.20

4) What is 18% of 40

5) 40 is 18% of what number?

6) What % of 40 is 18

7) $\frac{5}{6}$ is what %

8) What is the complete cost of a meal that cost \$35.68 if you have a 20% off coupon, pay the waiter a 15% tip and pay the 6% Florida tax? (remember you tip on the NON-DISCOUNTED price but you pay tax on the DISCOUNTED price).

MULTIPLE CHOICE PRACTICE

Multiple Choice

Use the answer "NOTA" (which stands for None Of The Above) if the answer is not listed

- Which of the following is a factor of 60?
A) 11 B) 12 C) 13 D) 14 E) NOTA
- If $\frac{4}{5} = \frac{N}{15}$, then N =
A) 5 B) 9 C) 12 D) 25 E) 35
- Round the answer to the nearest hundredth: $3.21 + 3.62 \div 2.43$
A) 4.69 B) 2.81 C) 4.70 D) 15.02 E) NOTA
- $5^3 \cdot 5^8 =$
A) 5^{11} B) 5^{24} C) 25^{11} D) 25^{24} E) NOTA

5. Judy's heart beats 70 times a minute. At this rate, how many times does her heart beat in an hour?

- A) 2800 B) 4200 C) 7000 D) 8400 E) 5000

6. $9(x + 3) - (2x + 5) =$

- A) $-11x - 2$ B) $7x - 32$ C) $11x - 22$
D) $7x + 22$ E) $-7x + 27$

7. Find 25% of 840.

- A) 210 B) 420 C) 1050 D) 730 E) 1680

8. Which of the following is the area of the square shown to the right?

- A) 210 B) 60 C) 213 D) 30 E) NOTA

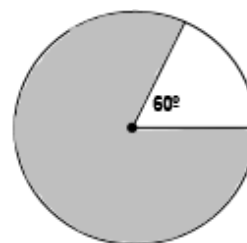


9. The least common multiple of 20 and 12 is
A) 240 B) 30 C) 60 D) 120 E) NOTA
10. The difference of a number n and the number 8 is 42. Which of the following equations represents this statement?
A) $\frac{n}{8} = 42$ B) $n - 8 = 42$ C) $n + 8 = 42$
D) $8n = 42$ E) $n = 5$
11. If $3x = y - 5$ and $x = -4$, then $y =$
A) -7 B) 3 C) 7 D) 17 E) 9
12. If 9 is P percent of 17, then P is a number between
A) 0 and 20 B) 20 and 40 C) 40 and 60
D) 60 and 80 E) 80 and 100
13. Reduce the final answer: $\frac{22+4}{44+16} =$
A) $\frac{13}{30}$ B) $\frac{1}{3}$ C) $\frac{4}{7}$ D) $\frac{13}{25}$ E) NOTA
14. Round to the nearest tenth, $\sqrt{6^2 + 3^2} =$
A) 5.8 B) 5.9 C) 8.0 D) 17.0 E) NOTA

15. A basketball team won 10 games and lost 15. What is the ratio of wins to the total number of games?
- A) $\frac{2}{3}$ B) $\frac{3}{5}$ C) $\frac{2}{7}$ D) $\frac{3}{7}$ E) NOTA
16. Which of the following is the prime factorization of 28?
- A) 2×7 B) 4×7 C) $2 \times 2 \times 7$ D) $2 \times 3 \times 3$ E) NOTA
17. $4(x + 6) + 2(3x - 5) =$
- A) $4x + 14$ B) $10x + 34$ C) $10x + 14$
D) $10x - 24$ E) NOTA
18. The area A of a circle is given by the formula: $A = \pi r^2$
If the radius of the circle is 7 inches, find the area of the circle.
- A) 36π sq. inches B) 7π sq. inches C) 49π sq. inches
D) 14π sq. inches E) NOTA

19. A circle with center O is shown to the right. What fractional part of the circle is shaded?

A) $\frac{5}{6}$ B) $\frac{2}{3}$ C) $\frac{3}{4}$ D) $\frac{9}{10}$ E) $\frac{4}{5}$



20. On a number line, what number represents the point half the distance between A and B ?



A) -4 B) -5 C) 4 D) 2 E) -8

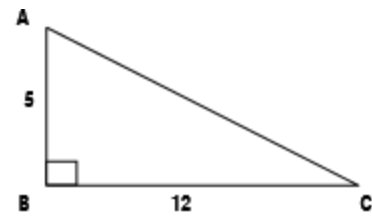
21. Multiply and write the answer in proper scientific notation:
 $(1.9 \times 10^3) \times (5.8 \times 10^8)$

A) 11.02×10^{11} B) 1.102×10^{12} C) 1.102×10^{10}

22.

In the right triangle ABC shown to the right, what is the length of AC?

- A) 10 B) 14 C) 13 D) 169 E) NOTA



23.

The price of a jacket was increased from \$140 to \$168. What was the percent increase in the price of the jacket?

- A) 10% B) 20% C) 30% D) 40% E) 16.7%

24 $(4x^3y^4)(-5x^2y^5) =$

- A) $-20x^6y^{20}$ B) $-20x^3 + -20y^4$ C) $-20x^5y^9$
 D) $-20x^9y^{1028}$ E) $-20xy$

25

Simplify: $x^2 + 3x + 4x^2 - 10x + 8 - x$

- A) $5x^2 - 8x$ B) $5x^2 - 5x + 8$ C) $5x^2 - 8x + 8$