

Before we begin, are there any questions from last day's work?

pp. 531-532 #1 - 4 (Copy of sheet on next screen)

p. 530 #3e * Check.

$$3e) (5)(-9) \div (-3)(7)$$

$$= \underline{-45 \div (-3)(7)}$$

$$= +15(7)$$

$$= 105$$

Confirmed: The **correct answer is 105**;
the textbook is *incorrect*!
the answer is **NOT** 15/7.

Note for 4b) the **correct answer is 20**;
the textbook is *incorrect*! (the answer is **NOT** 3)

Bring Graph Paper for Tuesday.

$$\left\{ \begin{array}{l} \left(\frac{3}{5}\right)^2 \\ = \frac{3^2}{5^2} \\ = \frac{9}{25} \end{array} \right. \quad \begin{array}{l} \text{or} \\ \downarrow \left(\frac{3}{5}\right)\left(\frac{3}{5}\right) \\ = \frac{9}{25} \end{array}$$

p. 531 **Practising**

1. Evaluate.

a) $\frac{1}{4} + \frac{-3}{4}$

c) $\frac{-1}{4} - 1\frac{1}{3}$

e) $\frac{-3}{5} + \frac{-3}{4} - \frac{7}{10}$

b) $\frac{1}{2} - \frac{-2}{3}$

d) $-8\frac{1}{4} - \frac{-1}{-3}$

f) $\frac{2}{3} - \frac{-1}{2} - \frac{1}{6}$

$$\begin{aligned} &= \frac{-33}{4} - \frac{1}{3} \\ &= \frac{-99}{12} - \frac{4}{12} \\ &= \frac{-103}{12} \end{aligned}$$

(Handwritten work for problem d) showing conversion to a common denominator of 12. Red arrows indicate multiplication by 3 and 4.)

NEL

Appendix A: Review of Esser

PDF

p. 532

2. Evaluate.

a) $\frac{4}{5} \times \frac{-20}{25}$

c) $\left(\frac{-1}{3}\right)\left(\frac{2}{-5}\right)$

e) $\left(-1\frac{1}{10}\right)\left(3\frac{1}{11}\right)$

b) $\frac{3}{-2} \times \frac{6}{5}$

d) $\left(\frac{9}{4}\right)\left(\frac{-2}{-3}\right)$

f) $-4\frac{1}{6} \times \left(-7\frac{3}{4}\right)$

3. Evaluate.

a) $\frac{-4}{3} \div \frac{2}{-3}$

c) $\frac{-2}{3} \div \frac{-3}{8}$

e) $-6 \div \left(\frac{-4}{5}\right)$

b) $-7\frac{1}{8} \div \frac{3}{2}$

d) $\frac{-3}{-2} \div \left(\frac{-1}{3}\right)$

f) $\left(-2\frac{1}{3}\right) \div \left(-3\frac{1}{2}\right)$

4. Simplify.

a) $\frac{-2}{5} - \left(\frac{-1}{10} + \frac{1}{-2}\right)$

d) $\left(\frac{-2}{3}\right)^2 \left(\frac{1}{-2}\right)^3$

b) $\frac{-3}{5} \left(\frac{-3}{4} - \frac{-1}{4}\right)$

e) $\left(\frac{-2}{5} + \frac{1}{-2}\right) \div \left(\frac{5}{-8} - \frac{-1}{2}\right)$

c) $\left(\frac{3}{5}\right)\left(\frac{1}{-6}\right)\left(\frac{-2}{3}\right)$

f) $\frac{\frac{-4}{5} - \frac{-3}{5}}{\frac{1}{3} - \frac{-1}{5}}$

0.3_4 Exponent Laws and Pythagorean Theorem Review (Spring 2019)-s19 February 13, 2019

MCF 3MI

Exponent Laws Review

Date: Feb. 8/19
(Every lesson)

Product Rule: $(a^m)(a^n) = a^{m+n}$ Quotient Rule: $\frac{a^m}{a^n} = a^{m-n}$

Power of a Power Rule: $(a^m)^n = a^{m \times n} = a^{mn}$ Zero Rule: $a^0 = 1$

Ex. 1: Simplify, then evaluate (if possible). (Explain the difference)

a) $(-1)^0 + (-2)^2$ b) $(x)^3(x)^7$ c) $(x^3)^7$ d) $\frac{x^{10}}{x^2}$
 $= 1 + (4)$ $= x^{3+7}$ $= x^{3 \times 7}$ $= x^{10-2}$
 $= 5$ $= x^{10}$ $= x^{21}$ $= x^8$

e) $(\frac{1}{2})^2 \times (\frac{1}{2})^3$ f) $(\frac{1}{2})^3 (\frac{2}{3})^2$ g) $(x^3y^2)(xy^3)$
 $= (\frac{1}{2})^{2+3}$ $= \frac{1^3}{2^3} \cdot \frac{2^2}{3^2}$ $= x^{3+1} y^{2+3}$
 $= (\frac{1}{2})^5 \leftarrow \text{Simplified}$ $= \frac{1}{8} \cdot \frac{4}{9}$ $= x^4 y^5$
 $= \frac{(1)^5}{(2)^5}$ $= \frac{4}{18}$
 $= \frac{1}{32} \leftarrow \text{Evaluated}$ $= \frac{1}{18}$

h) $\frac{(5x^2)^2}{(5x^2)^0}$ i) $(4u^3v^2)^2 \div (-2u^2v^3)$ j) $\frac{(3^2)(3^3)}{(3^4)^2}$
 $= \frac{(5)^2(x^2)^2}{1}$ $= 4^2(u^3)^2(v^2)^2 \div (-2u^2v^3)$ $= \frac{3^{2+3}}{3^{4 \times 2}}$
 $= 25x^{2 \times 2}$ $= 16u^6v^4 \div (-2u^2v^3)$ $= \frac{3^5}{3^8}$
 $= 25x^4$ $= \frac{16}{-2} u^{6-2} v^{4-3}$ $= \frac{3}{3^{5-8}}$
 $= -8u^4v^1$ $= 3^{-3}$
 $= \frac{1}{3^3}$
 $= \frac{(1)^3}{(3)^3}$
 $= \frac{1}{27}$

$$(a^x b^y)^z = (a^x)^z (b^y)^z = a^{xz} b^{yz}$$

$$\begin{aligned}
 (-5)^2 & \quad \text{vs} \quad -5^2 \\
 = (-5)(-5) & \quad = -(5)(5) \\
 = 25 & \quad = -25
 \end{aligned}$$

$$\frac{138600}{221760}$$

$$\frac{\cancel{17}^1 \times \cancel{5}^1 \times \cancel{8}^{21} \times \cancel{11}^{11=1}}{\cancel{22}^{11=2} \times \cancel{6}^2 \times \cancel{3}^1 \times \cancel{14}^2 \times \cancel{5}^1 \times \cancel{10}^2}$$

$$\begin{aligned}
 &= \frac{1 \times 1 \times 1 \times 5 \times 1}{2 \times 1 \times 1 \times 2 \times 1 \times 2} \\
 &= \frac{5}{8}
 \end{aligned}$$

0.3_4 Exponent Laws and Pythagorean Theorem Review (Spring 2019)-s19 February 13, 2019

What can you tell the person beside you about the Pythagorean Theorem?

Does it apply to ALL triangles?

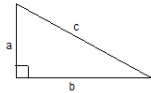
Does it matter what letters are used on the triangle?

Could you use the letters P, Q, and R for the vertices?

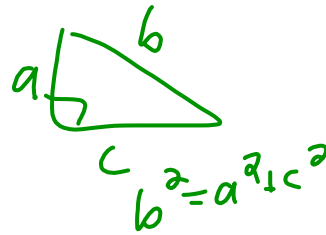
Would the equation automatically be $p^2 + q^2 = r^2$?

I can't think of anything else to ask :)

The Pythagorean Theorem

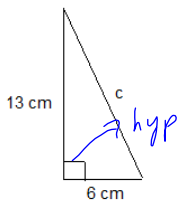


$$a^2 + b^2 = c^2$$

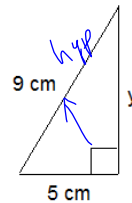


Ex. 1: For each right triangle:

- (i) write the equation for the Pythagorean theorem.
- (ii) calculate the length of the unknown side.

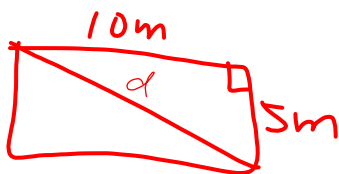


$$\begin{aligned} 6^2 + 13^2 &= c^2 \\ c^2 &= 6^2 + 13^2 \\ &= 36 + 169 \\ &= 205 \\ c &= \sqrt{205} \\ &\approx 14.32 \end{aligned}$$



$$\begin{aligned} 9^2 &= 5^2 + y^2 \\ y^2 &= 9^2 - 5^2 \\ &= 81 - 25 \\ &= 56 \\ y &= \sqrt{56} \\ &\approx 7.48 \end{aligned}$$

Ex. 2: Determine the length of the diagonals of a rectangle with width 5 m and 10 m.



$$\begin{aligned} d^2 &= 10^2 + 5^2 \\ &= 100 + 25 \\ &= 125 \\ d &= \sqrt{125} \\ &\approx 11.18 \\ &= 11.2 \text{ m} \end{aligned}$$

Homework Practice (Revised)

Bring Graph Paper for Tuesday.

p. 533 #1 - 5

pp. 534-535 #1ad, 2ad, 3cd, 4bc, 6

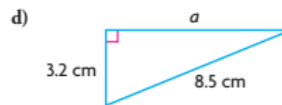
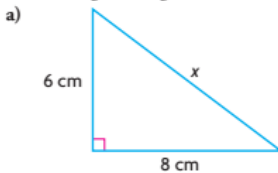
Practising

- Evaluate to three decimal places where necessary.
 - 4^2
 - 5^0
 - 3^2
 - -3^2
 - $(-5)^3$
 - $(\frac{1}{2})^3$
- Evaluate.
 - $3^0 + 5^0$
 - $2^2 + 3^3$
 - $5^2 - 4^2$
 - $(\frac{1}{2})^3 (\frac{2}{3})^2$
 - $-2^5 + 2^4$
 - $(\frac{1}{2})^2 + (\frac{1}{3})^2$
- Evaluate to an exact answer.
 - $\frac{9^8}{9^7}$
 - $\frac{2(5^5)}{5^3}$
 - $(4^5)(4^2)^3$
 - $\frac{(3^2)(3^3)}{(3^4)^2}$
- Simplify.
 - $(x^5)(x^3)$
 - $(m)^2(m)^4(m)^3$
 - $(y)^5(y)^2$
 - $(a^b)^c$
 - $\frac{(x^5)(x^3)}{x^2}$
 - $(\frac{x^4}{y^3})^3$
- Simplify.
 - $(x^2y^4)(x^3y^2)$
 - $(-2m^3)^2(3m^2)^3$
 - $\frac{(5x^2)^2}{(5x^2)^0}$
 - $(4u^3v^2)^2 \div (-2u^2v^3)^2$

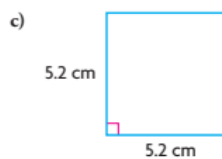
NEL

Practising

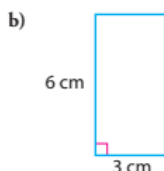
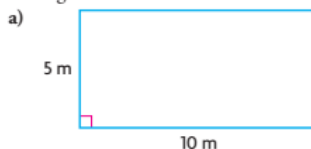
- For each right triangle, write the equation for the Pythagorean theorem.



- Calculate the length of the unknown side of each triangle in question 1. Round all answers to one decimal place.
- Find the value of each unknown measure to the nearest hundredth.
 - $a^2 = 5^2 + 13^2$
 - $10^2 = 8^2 + m^2$
 - $26^2 = b^2 + 12^2$
 - $2.3^2 + 4.7^2 = c^2$



- Determine the length of the diagonals of each rectangle to the nearest tenth.



- An isosceles triangle has a hypotenuse 15 cm long. Determine the length of the two equal sides.
- An apartment building casts a shadow. From the tip of the shadow to the top of the building is 100 m. The tip of the shadow is 72 m from the base of the building. How tall is the building?